ADOLESCENT DEVELOPMENT

LIONEL DESJARLAIS
JOHN RACKAUSKAS

This research project was funded under contract by the Ministry of Education, Ontario.

It reflects the views of the authors and not necessarily those of the Ministry.

The Honourable Sean Conway, Minister
Bernard J. Shapiro, Deputy Minister

Ontario

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ABSTRACT

This study provides parents and educators with the major conclusions of research on young adolescents, observed in intermediate and secondary schools. The intent was to both analyse and synthesize the most notable studies published since the 1930s. The ten years from 1965 to 1975 were found to be probably the most productive in terms of research on adolescence. During this period, almost every aspect of adolescent behaviour was studied. References to studies completed during this period dominate the most recent works on adolescence.

This study is divided into five parts. The first discusses adolescence in general. A general outline is then presented of physical development during adolescence. Third, intellectual development during adolescence is explored; this part is divided into four chapters that focus respectively on the Piagetian concept of intellectual development, the Vygotskyan view of the formation of concepts, the percepto-cognitive styles, and the quantitative aspects of intelligence. The fourth part is devoted to the emotional and social development of adolescents, with a separate chapter for each. Finally, the subject of moral development is examined in the fifth part, which consists of three chapters. The first gives a brief overview of the theories of moral development, the second discusses the conditions governing this development, and the last examines the educational implications.

The aim in publishing this work is to provide educators and parents with a better tool for meeting the needs of young adolescents.

The tragedy for adolescents today is that they must weather their adolescence at the very time society is weathering its own.

J.M. Beniskos

I. ADOLESCENCE

CHAPTER 1 - ADOLESCENCE: AN OVERVIEW

While not delving into the details of all aspects of adolescent growth, this chapter will serve as an introduction to the subject: adolescence. The meaning of adolescence, the theories of adolescence, and finally, the developmental tasks characterizing this period will all be examined.

1. The Meaning of Adolescence

Adolescence is variously described depending on the point of view of the observer. It may differ in time, culture, and theoretical point of view. The word adolescence derives from the Latin verb adolescere which means to grow up. Although it may be considered a period of transition, we are cautioned by Hurlock (1980), Ausubel (1954) and Osterreith (1969) that it is not discreet from and unrelated to childhood. Ausubel (1954) declared it axiomatic that the nature of adolescent development is conditioned by childhood experience. The years of adult maturity are influenced in turn by what has occurred in the adolescent period.

Stone and Church (1968) observe that the term adolescence is used in two somewhat different senses: (1) from the point of view of physical development it refers to the age span that begins with the prepubertal growth spurt and ends with the attainment of full physical maturity; (2) psychologically, it refers to a state of mind, a mode of existence that begins roughly with puberty and ends when, as Ausubel says, the individual has attained "executive independence" -- that is, when the individual has attained emotional and social maturity and has the experiences, ability and motivation to consistently assume the role of an adult.

Erikson (1962) considers identity to be the central theme of adolescence, which he describes as the stage during which the adolescent's new-found integrative abilities are used to synthesize all the things he has learned about himself in childhood into a concept of self that makes sense and shows continuity with the past while preparing for the future.

The beginning of adolescence is difficult to determine because the age of sexual maturing varies greatly. It is far more realistic to use physiological indices than age at puberty, which marks the start of sexual maturation, and varies widely between boys and girls and for individuals within each sex group. Hurlock (1980) estimates that adolescence extends from 13 to 18 years for girls and from 14 to 18 for boys. She further divides adolescence into two periods with the dividing line at age 17.

In early adolescence, the youth is preoccupied with the profound physical changes taking place in his/her body and with expressions of independence which are in contrast to the social dependence of childhood. In addition to sharing the young adolescent's concerns, older adolescents are confronted with adjustments to the adult world of responsibility in matters of sex, marriage, career, politics, and parenthood.

Hurlock (1980) includes puberty as an integral part of adolescence, but not synonymous with it. Adolescence includes all phases of maturing, not just sexual maturing. Not all writers agree with Hurlock. For example, McCandless (1979) considers adolescence a period of psychosocial development following puberty and extending to the time when executive independence is reached.

In Hurlock's (1980) view, puberty is a period that fairly equally overlaps with the end of childhood and the start of adolescence. Thus, two years are spent preparing the body for reproduction and two years completing the process. The first two years are known as preadolescence or pubescence and puberty is the point in life at which sexual maturity begins. The pubescent child is not an adolescent because he is not sexually mature, but neither is he a child because many physical changes and behaviour patterns have been initiated and there is an apparent transformation in progress from the childlike features of childhood to those of an adult.

A growing number of contemporary authors use the term transescence when referring to the period of physical and psychological maturation that precedes adolescence.

The central phase for puberty is somewhere between the 12th and 15th year and may occur anywhere between the 9th and 17th year in girls and one or two years later in boys. The precise timing of puberty is a matter of individual growth as affected by both internal and external factors.

2. Theories of Adolescence

i) The Nature and Value of Theories

Since the turn of the century, special attention has been directed toward the adolescent period of development. This attention has generated a vast quantity of research data which is most incomprehensible unless ordered in some systematic way. Theories serve this function. They are best thought of as conceptual models, composed of a cluster of relevant assumptions, systematically related to one another, and a set of empirical definitions.

Numerous theories have been promulgated in the scientific inquiry on adolescence since the turn of the century. In principle, they accept the assumption that adolescence is a unique phase in development and incorporate essentially the same data on biological and physical changes. Where they differ, however, is in the influence of the biological changes on the biological, psychological, psychosocial, sociological or anthropological processes. (Beller, 1973)

ii) Biological Theories

G. Stanley Hall, the father of the psychology of adolescence was the first theorist of consequence to address this phase of human development. His theory is considered biological in that it accounts for human development through the genetic programming recorded in each individual. Hall's theory leaves little room for environmental factors. Although he was not completely oblivious to cultural influences, he nonetheless clung to the belief that behavioural changes occurring during this period of growth were completely conditioned by physiological events dependent on the function of the endocrine glands. A major assumption in Hall's theory, stimulated in large measure by Darwin's concept of evolution, is the concept of recapitulation. By this view, the experiential history becomes a part of the genetic structure of the individual. Accordingly, the individual passes through stages comparable to those of the history of mankind. Hall therefore recommended acceptance of this process and described adolescence as a period of inevitable sturm und drang.

Arnold Gesell, like Hall, developed a theory of maturationally determined cycles of behaviour. His theory is characterized as morphogenetic in that "environmental factors facilitate or inhibit growth, but the basic direction of growth is laid down by maturational forces". (Beller, 1968) Gesell was one of the foremost proponents of systematic and detailed empirical observations of development at various stages from infancy through adolescence. Important in his construct of development are maturationally determined reccurring cycles of innovation, integration and equilibrium. Growth in such a system appears as a series of spiral oscillations that "determine periods of rapid growth and periods of regression to consolidate acquisitions, followed in turn by growth spurts and so forth, from childhood to adulthood". (Cloutier 1982) This "reciprocal interweaving" gives us a description of adolescence as consisting of vivid contradictions of behaviour at different age levels. During the periods of innovation and unresolved integration those dealing with adolescents may anticipate difficult behaviour. In the periods of equilibrium, a sense of equanimity will occur.

Gesell places great importance on the concept of adolescent-parent interaction. He points out that parents are also developing "and thus the quality of interaction is a function of the synchronization of their mutual growth". (Gesell, Ilg and Ames 1956, quoted by Cloutier 1982) "This entire concept of parent-child interaction today constitutes a basic element in development as viewed under the ecological approach". (Belsky 1981, quoted by Cloutier 1982)

Additional biological theories are those of Kretschmer's (1951) morphology types and Zeller's (1951) body gestalt.

iii) Cultural and Sociological Theories

More than any other group, cultural anthropologists have challenged the assumptions of the biological point of view. In 1925, Margaret Mead assembled a large body of data dealing with comparative psychology of adolescence. Her studies of Samoan culture made it apparent that the adolescent experiences in Western civilization were not inevitable and that there were degrees of conflict, stress and difficulty. Culturally-oriented theorists in the main hold that cultural conditions are the determining factors as to whether human development will occur in stages or be continuous.

Ausubel (1954), while crediting cultural anthropologists with correcting the ethnocentric bias of the biological point of view, finds them erring when, working from their assumption of a relationship between development and culture, they illogically concluded:

> that the entirety of adolescent psychology could be regarded largely as the product of norms and restrictions in the child's surroundings which deny, postpone or regulate sex and other activities of which he is capable as a maturing person.

iv) Psychoanalytic Theory

Psychoanalytic theory fits into neither biological nor cultural types. The classical psychoanalytic theory did emphasize the importance of biological factors; however, later psychoanalytic theorists such as Erikson have given much more attention to the importance of culture and environment. Erikson's studies provide a wealth of intuition on the thought patterns and emotions of adolescents and on the nature of the identity crisis they experience in varying degrees. Erikson's psychosocial stages of ego development provide for continuity in personality development throughout the entire life span. Table I illustrates this by schematically presenting Erikson's first five psychosocial development stages.

Harry Stack Sullivan (1953), like Erikson, made some important extensions of psychoanalytic theory. He contributed significantly to our understanding of the psychology of adolescence by emphasizing the importance of interpersonal relationships and their effect on the development of the self-concept. Implicit in Sullivan's interpersonal theory are these generalizations: a positive self-concept results from an atmosphere of approval and support; a negative self-concept results from negative appraisals.

Psychoanalytic theory as it has developed in recent times puts greater emphasis on external reality. To illustrate, Conger (1977) cites Anna Freud's recognition of opportunities in adolescence for correcting previous adverse experiences and Otto Rank's emphasis on the conscious ego as opposed to the unconscious level in the creative and productive aspects of human nature.

v) Psychological Theories

The distinguishing feature of psychological theories of adolescence is their focus on psychological processes as important mediating factors in adolescent development. Prominent among such theorists are Kurt Lewin and Edward Spranger. Their theories are built on studies of individual human experience with particular attention to the states of consciousness, perception, values, inner conflict and stress.

Lewin's central concern was in searching for an understanding of the organismic behaviour as the result of dynamic interaction between a person and his environment. The core concept of his theory is represented in the formula: behaviour (B) is a function of the person (P) and his environment (E). In this formula, both P and E are interdependent variables. Thus, to understand an individual, one must consider both the individual and his environment as they interact.

TABLE I

ERIKSON'S FIRST FIVE STAGES OF PSYCHOSOCIAL DEVELOPMENT[1]

Birth to 1st year	Trust vs. Mistrust. Adequate care and genuine affection lead to view of world as safe and dependable. Inadequate care and rejection lead to fear and suspicion.
2nd year	Autonomy vs. Doubt. Opportunities for child to try out his own skills at own pace and in own way lead to autonomy. Overprotection or lack of support may lead to doubt about ability to control self or environment.
3 - 6 years	Initiative vs. Guilt. Freedom to engage in activities and patient answering of questions lead to initiative. Restriction of activities and treating questions as a nuisance lead to guilt.
6th year to puberty	Industry vs. Inferiority. Being permitted to make and do things and being praised for accomplishments lead to industry. Limitation on activities and criticism of what is done lead to inferiority.
Adolescence	Identity vs. Role Confusion. Recognition of continuity and sameness in one's personality, even when in different situations and when reacted to by different individuals, leads to identity. Inability to establish stable traits in perception of self leads to role confusion.

Edward Spranger emphasizes the discovery of the ego and the totality of the psychic structure. He is very much in tune with Gestalt psychology and is primarily concerned with inner determinants and the individual's experience and conception. His point of view, called the Geisteswissenschafliche theory, is very influential in Europe. (Conger, 1977) Spranger has resolved the issue of stage development vs. continuous development and heightened emotionality by stating that adolescent development may take on different patterns in individual cases. He has proposed three distinguishing patterns of adolescent development.

> The first pattern, which corresponds to Hall's idea of adolescent development, is experienced as a form of rebirth in which the individual sees himself as another person when he reaches maturity. This is a period of storm, stress, strain, and crisis, and results in personality change. It has much in common with a religious conversion, also emphasized by Hall.

---

[1] Source: R. F. Biehler, Psychology Applied to Teaching, Boston, Houghton Mifflin Co., 1974.

> The second pattern is a slow, continuous growth process and a gradual acquisition of the cultural values and ideas held in the society without a basic personality change.
>
> The third pattern is a growth process in which the individual himself actively participates. The youth consciously improves and forms himself, overcoming disturbances and crises by his own energetic and goal-directed efforts. This pattern is characterized by self-control and self-discipline, which Spranger related to a personality type that is striving for power.

vi) A Psychobiological-Psychosocial Theory of Adolescence

Ausubel's attempt to provide a theoretical framework for the accumulation of research data at mid-century provides a useful syntax with which to reconcile, in part, the extreme biological and cultural views on adolescence. Adolescence is identified as a distinctive stage in personality development precipitated by significant changes in the biological status of the child. (Ausubel, 1954) As these changes represent a discontinuity with previous biosocial conditions, extensive reorganization of personality is essential. Ausubel differentiates between adolescent problems which relate to general developmental trends which are universal in distribution and those problems wholly conditioned by cultural factors and modes of control peculiar to a given culture. He has empirically defined the former as psychobiological in origin and the latter as psychosocial. McCandless (1970) has captured the essence of Ausubel's position in the following succinct definition of terms:

> The psychobiological aspects of adolescence refer to those factors that are universal and independent of the culture in which an adolescent develops, such as sexual maturity, increases in height, weight, and strength, development of secondary sex characteristics, and alteration of self-concept and social status. These factors demand personal and social changes, regardless of whether one lives in America, Pakistan, or Dahomey. Becoming tall and strong, like one's father or mother, necessitates making changes in one's way of life in all societies and change of a personal and social nature demands of the adolescent new ways of adaptation, or socialization. Culturally differential ways of adapting to universal factors in adolescence constitute the psychosocial aspects of adolescence.

Reaching mature or nearly mature height and strength psychobiologically means that one now does things for himself that formerly were often done for him. But the specific things he does are psychosocial in nature, and culturally determined. (McCandless, 1970)

The reasons for a common core of psychobiological problems in adolescence in a wide range of cultures are discussed at length in Ausubel (1977).

1. Adolescence is universally a transitional stage in personality development. Transitional periods by their very nature share many properties in common and generate characteristic constellations of psychological problems that inevitably arise when individuals are confronted by radical changes in their biosocial status.

2. A second source of psychobiological uniformity in the problems of adolescent development is to be found in the common group of physiological and anatomical changes that are everywhere associated with the occurrence of adolescence. These changes give rise to new types of drives, emotions, and stages of awareness.

3. Almost with no exceptions, the age of pubescence is culturally recognized as the appropriate time for initiating the changes in personality status that are characteristic of adolescence.

4. The nature of adolescent development in different cultures will be comparable because certain very important aspects of personality maturation depend upon childhood experience with parent attitudes that are universal in distribution.

5. The universality of the various adjustive techniques available to adolescents in meeting disequilibrium induced by new status problems: repression, aggression, withdrawal, projection, compensation, displacement. Again it is undeniable that the choice, the frequency, and the precise form taken by these mechanisms will vary, and depend upon differences in cultural tolerance for different types of defensive behaviour. But these reactions are such a basic part of the adaptive repertory of human beings that individual preferences resulting from unique factors of constitution and early background cannot be completely avoided. (Ausubel, 1954)

Ausubel defines psychosocial problems as follows:

> In the realm of psychosocial problems belong those more specific aspects of adolescent development that are especially conditioned by the special nature of the cultural environment. Here we are concerned with factors accounting for differences rather than for uniformities in the developmental process among cultures. (Ausubel 1954)

3. Goals of Adolescence

As the primitive society uses the period of puberty as a period of special preparation of boys and girls for adult life, so the modern society uses the longer period of adolescence for the preparation of adolescents to meet the special requirements of adulthood in a modern technological society that is now evolving into what many call an information society.

The goals of adolescence in a complex modern society are determined in great measure by the individual's growth potential and the demands placed upon him by the culture. The changes that take place in adolescence are both developmental and cultural. They are guided by the adolescent's own nature and cultural expectations. Conger (1977) observes that "it is fair to say that adolescence begins in biology and ends in culture". With the biological changes accompanying this emotional, social and intellectual development, a child who is normally dependent on others is, at the end of adolescence, "ready to leave his home -- emotionally and physically --

to maintain himself, to manage his own social contexts, make up his own mind, establish his own home, and to concern himself with the general principles behind service phenomena". (Cole and Hall, 1970)

From time to time, authors have attempted to describe and define these objectives, goals, or developmental tasks of adolescence. Obviously, as is apparent from the following lists, there is much agreement among authors on this point.

A very popular statement of developmental tasks, in 10 points, was presented by Havighurst in 1953:

- achievement of new and more mature relations with age-mates of both sexes;
- achievement of a socially approved masculine or feminine social role;
- acceptance of one's physique and the effective use of the body;
- achievement of emotional independence of parents and other adults;
- achievement of the assurance of economic independence in the sense of feeling that one could make one's own living if necessary;
- selection and preparation for an occupation;
- preparation for marriage and family life;
- development of intellectual skills and concepts necessary for civic competence;
- the desiring and achieving of socially responsible behavior;
- acquisition of a set of values and an ethical system as a guide to behaviour.

Corey (Ausubel, 1954) has produced essentially the same in a more condensed listing. He states that adolescents must:

- learn to accept and come to terms with their own bodies;
- learn an appropriate sex role;
- establish independence from adult (particularly parental) domination;
- achieve adult economic status;
- develop a system of values,

The most popular list of the objectives of adolescence is that drawn up by Cole and Hall (1970):

- achievement of independence, especially emotional, from home;
- establishment of identity, as a person;
- development of self-motivation;
- establishment of a set of values and enough self-control to adhere to the values selected;
- development of an interest in and sympathy for other people as individuals;
- acceptance of sexual role and adequate heterosexual interests;
- development of added intellectual powers;
- acquisition of skills that will lead to self-support;
- development of satisfactory relations with age-mates.

More recently, Beniskos (1980) gave a version of the objectives or developmental tasks of adolescents living in a society that is seeking its own identity and meaning.

Beniskos believes that in all periods of history and all cultures, adolescence has been that critical period during which an adolescent must define himself and carve out a place in society. In the past, this search for identity was promoted by a stable society, aware of its responsibilities with respect to social integration of young adolescents.

But times have changed. Adults now appear just as much in search of their identity as adolescents, and this gives adolescence a whole new dimension. Today, the similarities between what adolescents and adults are experiencing are quite obvious.

Society no longer gives adolescents a model on which to build. The adolescent must discover who he is, but unfortunately, during this introspection, he receives no answers or direction from adults asking the same question: "Who am I?"

An adolescent must become independent and free of outside authority. A quick glance at the modern world reveals an adult society that is questioning religious, political, and scientific authority in order to achieve greater independence.

An adolescent must define himself in terms of sexuality. Yet this topic generates only misunderstanding and confusion among adults.

An adolescent seeks social integration. Today's adults are also seeking new forms of social integration.

An adolescent seeks to establish stable relations with a person of the opposite sex, yet adults today are questioning heterosexual relations and testing new family arrangements and new forms of heterosexual relations.

An adolescent wants to define himself in the workplace. Today's adult is questioning the value of work and the meaning of occupation.

An adolescent seeks to integrate his intellect and emotions. Adults are attempting to achieve the same thing.

At a time when society is questioning the very concept of civic duty, adolescents are trying to define themselves as responsible, committed and innovative citizens.

Adolescents are earnestly seeking some spritual meaning to life. Today's adults, however, are questioning the form and substance of their relationship with God.

An adolescent must establish his set of values at a time when society is in the throes of an upheaval of established values.

The advantage of this view of the objectives of adolescence is its recognition of the dynamic character of individual-society interaction experienced with such intensity by adolescents. It places the adolescent's development in a complex, multi-variable ecological context.

Ausubel (1954) notes that while few theorists agree on whether the changes are biological or cultural in origin, the vast majority do agree on the primary developmental tasks of adolescence. These tasks are seen as adjustive difficulties. There are three sources of developmental tasks: 1) physical maturation, 2) expectations of the culture, and 3) the individual's aspirations.

The theories of adolescence are the result of authors' efforts to systematize their observations and data. Each of these theories presents a specific view of a given reality, that of the adolescent. Because this person possesses intelligence, freedom, the power to manage his life and make a start, there is little likelihood theorists will succeed in developing an adequate theoretical formulation. There is also little likelihood they will succeed in capturing in a scientific formula the dynamic aspect that can create a unique person at any point in time, who interacts with a human and physical environment that is also unique.

Theories of adolescence tend to emphasize only one of a person's many dimensions, and therefore must be seen as providing only a partial answer. Educators must retain what they find reasonable and strive to incorporate the findings and contributions of theorists into a fully humanistic view.

II. PHYSICAL DEVELOPMENT DURING ADOLESCENCE

CHAPTER 2 - GROWTH AND PHYSICAL DEVELOPMENT

Introduction

The study of growth and physical development in young adolescents is part of the field of human physiology. Physiology is concerned with the physical mechanics organismic function, and thus includes the functioning of both the parts of the organism, and the organism as a whole. Strictly speaking, psychology or human behaviour can be considered part of human physiology, for two reasons: first, human behaviour is the sum total of the overall activity of the human organism; second, the organism's behaviour will be constrained by its physical limitations. It is often said in physiological psychology that one cannot teach a rat to fly no matter how hard or long one tries. This is so simply because rats are aerodynamically unstable -- they lack the physical attributes in terms of shape and propulsion to act as heavier-than-air flying machines. The human organism is subject to the same type of constraints. One of the goals of adolescent physiology is to establish what adolescents are capable of; another is to establish what adolescents are not capable of.

There is one difficulty inherent in the study of adolescent physiology which is not present in the study of either child (or preadolescent) or adult physiology. Except for the period of intra-uterine life, no period other than adolescence in human life history is associated with very rapid changes in physiological parameters. In the preadolescent period, many physiological parameters show a decline in their rates, or velocities, relative to foetal life or infancy. At adolescence, these rates (for example, rate of increase in height, rate of increase in mass) show rapid increases, and just as rapid subsequent declines.

Further confounding the research of those who study the physiology of adolescence is that the increases and decreases of rates of various parts of the human organism do not necessarily increase and decrease at the same time or at the same velocity. The rate of one function may be increasing while the rate of another may be decreasing. Changes in time or rates of functions may be causally related to sex, chronological age, physiological age, nutritional background, sociological parameters, general genetic background, etc. Further, the rate of change may also change with time, necessitating overlapping longitudinal studies of adolescents, such studies preferably beginning before adolescent development and continuing for some time after adolescence.

Because of these constant fluctuations, and changes within changes, and because of the relative ease of investigating some physiological parameters and the relative difficulty of investigating other phenomena, adolescent physiology currently suffers from large gaps in knowledge. Most troubling of all, perhaps, is the lack of baseline data against which other data might be compared to ascertain normality or lack of it. Associated with all of the changes mentioned above is the inherent variability found among the individuals which constitute any biological population.

Physiology therefore sets out to study the mechanical operations of living things, in this particular instance, a period of life of human organisms known as adolescence.

Adolescence is a period in human life history in which the human organism changes over from a larval condition to an adult condition. The larval condition of any biological entity is characterized by two operational states, one present and one lacking: larval organisms possess the ability to maintain themselves, but lack the ability to reproduce. The period of childhood (from infancy to the beginning of adolescence) is the period during which the larval potentiality becomes actualized. The period of adolescence involves the conversion of the self-maintaining human being into the self-maintaining and reproducing human being. Without the reproductive capability, of course, the human species would be doomed to extinction. This is so, of course, for all biological entities.

In the following pages, it is not our intention to present a detailed study of all physiological phenomena that characterize the growth and development of young adolescents; we will focus instead on a few basic concepts related to growth and on some general physiological phenomena.

1. Growth in Adolescents

(a) Patterns of Growth in Height and Weight

The most studied growth parameters in children and adolescents (probably because of the ease of obtaining data) are growth in height and mass. Tanner (1961 and elsewhere) reports on the oldest known study of growth of a child, that made by Count Philibert de Montbeillard upon his son from birth to age 18, during the years 1759 to 1777.

If we plot the height against age, the resulting curve (Figure 1) is non-linear and appears at first glance to be smoothly parabolic, asymptotically approaching adult height.

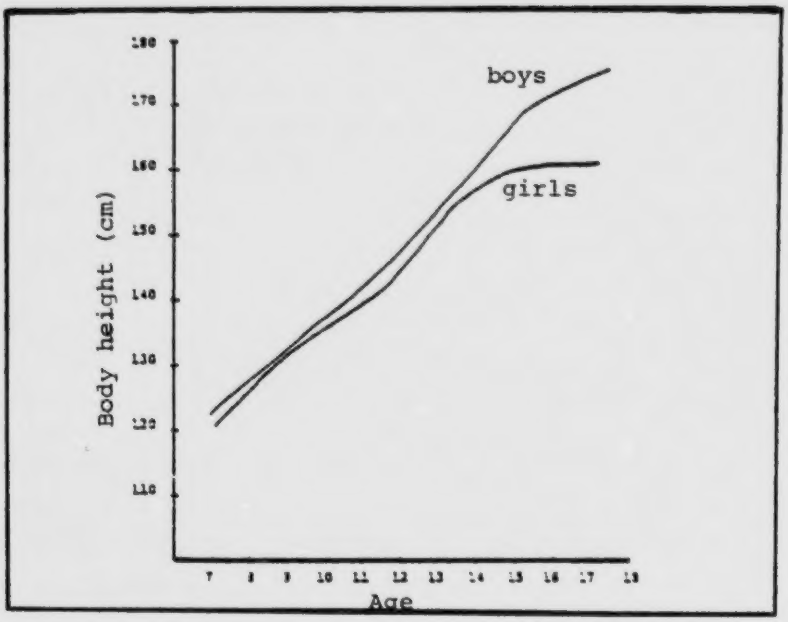

Figure 1. Growth Rate for Girls and Boys Aged 7 to 18 Years.

However, if we plot height gain relative to previous time period against age (Figure 2), we find that the attaining of adult height passes through four separate stages.

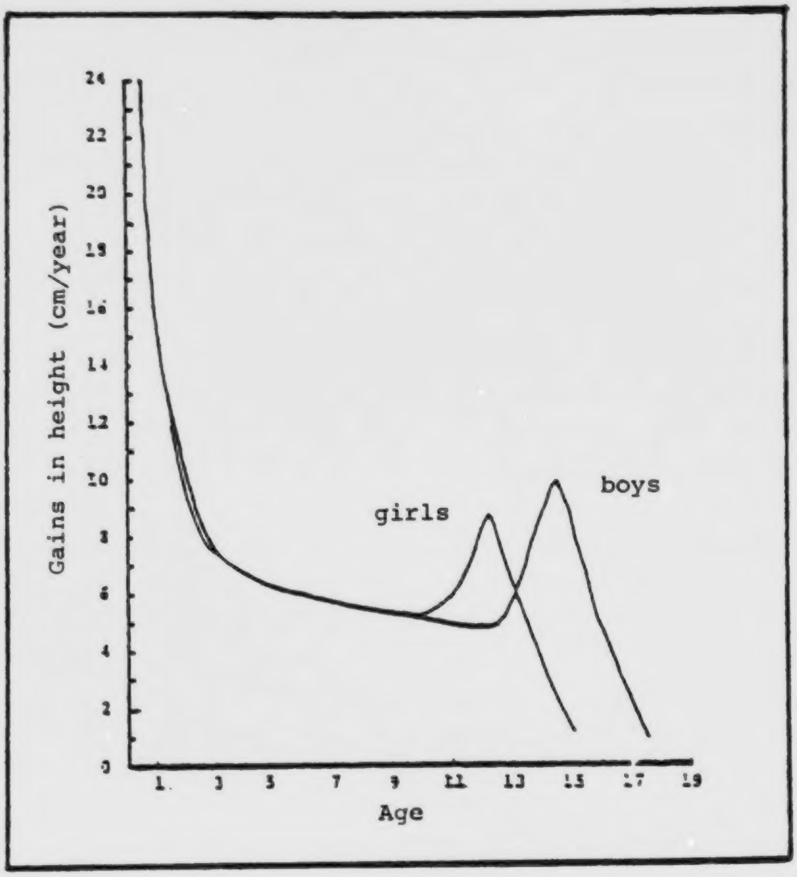

Figure 2. Curves Showing the Growth Rate for Girls and Boys.

1) Initially, the height gain per year decreases very rapidly for the first three to five years of life. For example, a child gains much less in height between age two and three than it did between age one and two.

2) There follow several years of very slowly decreasing annual or periodic increases in height.

3) This period of relatively stable increase is followed by a short (three- to four-year) period during which increase in height accelerates; the annual or periodic increment in height increases relative to the previous period in time. This period is called the adolescent growth spurt; at no time does the height increment reach the height increments attained during the first year of life.

4) The adolescent growth spurt, which lasts three or four years, is followed by an equally abrupt and perhaps slightly more rapid decrease in the annual or periodic increase in height. The annual increment decreases to zero as adult stature is achieved.

Such graphic plots, in which annual or periodic increments are plotted against age, are referred to as velocity or rate of growth curves.

The general pattern of velocity curves is a human universal as can be seen by studies made in Bulgaria (Anguelou et al., 1971), Iran (Wadsworth and Emmani, 1970), China (Chan, 1972), France (Roy et al., 1972), Burma (Khin, 1971), England (Marubini et al., 1972) and Nigeria (Johnson, 1970).

The advantages of the velocity curve for studying the adolescent growth spurt are:

1) In individual cases, the start of the growth spurt is easily recognized;

2) The rapid growth spurt followed by an equally rapid deceleration in growth produces a sharp peak on the velocity curve.

This value is the peak height velocity; because of its sharpness, the age at which it occurs can be very readily ascertained. Peak height velocity ages can be lumped together and treated statistically for comparative purposes and also for the purpose of attempting to relate other adolescent growth events. The relationships thus established may then turn out to be causally related.

Differences in peak height velocity are sex-related. On average, peak height velocity is reached in girls about two years before it is reached in boys. The range over which peak height velocity is achieved for girls is ages 10 to 13 years, for boys, from 12 to 15 years. Growth is so intense at peak height velocity that the average increment for boys is about four inches a year, and for girls, somewhat less.

Before puberty, boys are, on average, only one to three percent taller than girls; the earlier average adolescent growth spurt of girls relative to boys results in girls being taller than boys on average from ages 10 through 13. The later greater, and perhaps longer, sustained adolescent growth spurt of boys results in their eventually reaching the same height as girls, then seen passing them in height so that on average, boys are some 10 per cent larger than girls in height and most other dimensions. (Shuttleworth, 1939)

While practically all skeletal and muscular dimensions take part in the adolescent growth spurt, all parts do not necessarily undergo the same relative amount of change at the same time. There is a rather regular order of growth timing. Generally, leg length reaches its peak growth velocity first. A few months later, body breadth increases, with shoulders last. Most of the spurt in adolescent height is due to increase in trunk height, whose peak growth velocity does not occur until about a year after leg peak growth velocity. (Tanner, 1972) As a rule, growth in lower limb length is quick and short, occurring in early adolescence. Growth in trunk length is slow and prolonged. (Chan, 1972)

Subcutaneous (or underskin) fat which has a temperature-insulative function and also an energy-storage function, also has a function in determining the contours of human individuals. Descriptive terms such as "leanness" and "plumpness" are expressions of the amount of subcutaneous fat a person possesses. The more rounded contours of women compared to men reflect the average difference in subcutaneous fat between the two sexes. Subcutaneous fat thickness increases dramatically after birth to about nine months, declines slowly and steadily until ages six or eight, depending on the individual child. Beyond this time, subcutaneous fat levels increase again. In girls, both trunk and limb subcutaneous fat increase up to maturity. In boys, however, subscapular (body) fat increases until maturity while limb subcutaneous fat increases until about the time of the adolescent growth spurt, and then decreases. (Tanner, 1961)

Since increase in limb length precedes increase in trunk length and breadth, since the length of the extremities (hands and feet) increases with limb length, and since the quantity of subscapular fat is generally quite low (but increasing) at the earliest stages of adolescence, early adolescents may become very self-conscious about their apparent disproportionate body parts. A preadolescent curriculum which would include some study of what to expect during their growth spurt may help alleviate these self-conscious attitudes.

(b) Sexual Maturation in Adolescents

The primary end result of sexual maturation in humans is the acquisition by the gonads of the ability to produce functional sperm (the process of spermiogenesis) in the case of the male testes, or the ability of the ovary in the female to release eggs into the body cavity. The process of spermiogenesis in the human male (as in most mammals) is a continuous process. The testes consist of a mass of coiled tubes, the cellular walls of which constantly produce new spermatozoa in the same stage of maturation; consequently, there is a continuous production of functional spermatozoa. Oogenesis in the human female is essentially complete before birth. As in most mammals, all the eggs (ova) which a particular human female will possess have been present in the ovary since before birth. The primary result of sexual maturity in the human female then is maturation of the ovarian tissue so the already mature ova can be released. The rate of release of ova is approximately one ovum per month.

Associated with the primary sexual characteristics listed previously is the development and maturation of the secondary sexual characteristics. The secondary sexual characteristics are concerned with the following:

1) Delivery of eggs and sperm to a mutually benign environment so that fertilization of the ovum can occur (in humans, the upper third of the oviduct);

2) Providing a suitable prenatal environment for the embryo;

3) Providing a source of postnatal nourishment for the infant.

Since studies of the acquisition of primary sexual function are sparse, sexual maturation has generally been discussed in terms of or related to changes in secondary sexual characteristics, i.e. characteristics not essential to reproduction but whose development helps understanding of sexual behaviour. Cloutier (1982) summarizes the main secondary sexual characteristics as follows:

Girls	Boys
Broadening of shoulders	Broadening of shoulders and appearance of triangular trunk form
Broadening of hips with accentuation of roundness and waistline	Appearance of hair on pubis, in armpits, on limbs and possibly on chest, and appearance of beard
Relative rounding of upper and lower limbs due to deposit of adipose tissues	Changes in colour and texture of cutaneous pigmentation and functional maturation of sudoriparous glands
Development of breasts	

Appearance of hair on pubis, in armpits and on limbs, and appearance of generally colourless facial down	Deepening of voice
Growth of sudoriparous glands and intensification of functioning	
Gradual vocal adjustment involved in transition from young girl's voice to woman's voice.	

In 1939, Greulich et al. created a rating system for development of the human breast. In two studies on visible physical changes in adolescents, Reynolds and Wines furthered the work begun by Greulich. In a classic work entitled Growing Up, Tanner (1973) presented a series of graphic photographs of the stages of adolescent development. Tables II and III present descriptions of the Tanner sexual maturity stages for boys and girls.

The Tanner system provides a quick and easy method of establishing the levels of physical maturation achieved by individuals. It now appears to have been universally adopted by pediatricians and other medical personnel who deal with adolescents.

(c) Chronological Age, Physiological Age and Sexual Maturation

Chronological age is a poor indicator of adolescence. This is apparent by examining data on the average chronological age of various adolescent events, especially when these data include standard deviations of measurement, or the range of ages during which a particular event occurs. Tanner (1970, 1972), in studies involving thousands of children, observed that the chronological age range over which menarche occurs is 10 through 16 . The height spurt may begin as early as age 9 or as late as 14 . Breast bud stage may be as early as age 8 and as late as 13; pubic hair may reach stage two as early as age 8 in some girls and as late as age 14 in others.

Similar ranges are found for developmental patterns in boys. Initiation of height spurt may begin as early as age 10 or as late as age 16. Cessation of the growth spurt may be as early as age 13 and as late as age 17. Penis development may begin as early as age 11 or as late as age 14, and may be completed as early as age 13 and as late as age 18. Boys aged 10 may show signs of pubic hair development, or it may be delayed as late as age 14. In some boys, the adult pubic hair pattern (stage five) may be achieved as early as age 14 or as late as age 18. Increase in testicular volume may begin as early as age 10 and be complete as early as age 14. In other boys, testicular volume increase may not become apparent until age 13 nor be completed until age 18.

TABLE II

SEX MATURITY STAGES IN GIRLS

Tanner Stage	Pubic Hair	Breast Development
1.	Preadolescence: The vellus (or down hair) is not any different or more developed on the pubes than it is on the abdominal wall.	Preadolescent: Only the papilla (nipple) is elevated above the general chest surface.
2.	Sparse, lightly pigmented, generally straight or slightly curled; along the medial border of the labia.	Breast and nipple elevated as a small mound. The diameter of the areola (darker pigmented area surrounding the nipple) has increased over preadolescent stage.
3.	Hair is darker, coarser and more curled than stage 2. Increased area is covered.	Breast and nipple areola enlarge. There is no contour separation between breast and areola.
4.	Hair is of the adult type; i.e., coarse, curly, abundant. No spread to medial surface of thighs.	Areola and nipple form a secondary mound.
5.	Adult feminine triangle; spread to medial surface of thighs.	Mature breast; nipple projects above general breast contour. Areola is again part of general breast contour.

TABLE III

SEX MATURITY STAGES IN BOYS

Tanner Stage	Pubic Hair	Penis	Testicles
1.	None; no difference between pubic hair and abdominal hair.	About same size and shape as in early childhood. Preadolescent pattern.	
2.	Sparse growth of long, slightly pigmented downy hair, straight or slightly curled, chiefly at base of penis.	Very slight, if any, enlargement.	Enlarged; skin over testes is pinkish; texture has altered.
3.	Darker than above, but still sparse, curling apparent.	Penis has elongated; perhaps thickened slightly.	Testes and scrotum enlarged over stage 2.
4.	Hair is adult type, but has not yet spread to medial surface of thighs.	Glans and breadth of penis have increased in size.	Scrotal skin has become dark-pigmented.
5.	Adult type; present on medial surface of thighs.	Adult in size and shape.	Adult in size and shape.

These differences are graphically illustrated by Tanner (1973) in a series of photographs involving three girls aged precisely 12.75 years, and three boys aged precisely 14.75 years. An examination of Figure 3, taken from Cloutier (1982), reveals that the maturational ages represented range from preadolescent (prepubertal) through adult.

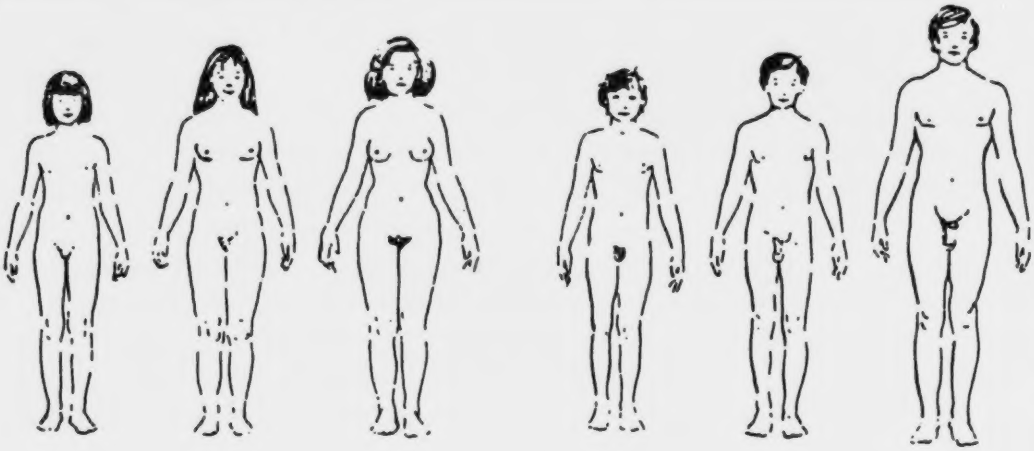

Figure 3: Comparison of Physical Growth Patterns in Girls and Boys.

Source: Katchadourian, H., The Biology of Adolescence.

To reduce the dependency on chronological age, various physiological standards have been employed to establish developmental ages. These standards are particularly valuable in studying growth and related maturational events in adolescents, as they are based on physiological events through which all adolescents will pass, sooner or later. While such criteria as the number of erupted teeth and the percentage of water in muscle cells have been used, the most useful criterion so far established is that of skeletal maturity (or bone age), which is a measure of how far any particular bone has progressed toward its final or mature shape and relative positioning to other skeletal elements.

As an example of the value of skeletal maturity and the concept of physiological age as opposed to chronological age, Tanner (1970) points out that the chronological age range over which menarche, or first menstruation, may occur is from 10 to 16 years, while the skeletal age range for the same event is only 12 to 14 years. It has been established that early-menarche girls have consistently advanced skeletal ages over late-menarche girls from at least chronological age 8 on. Conversely, the greater the skeletal age at which menarche occurs, the later the occurrence, thus indicating a relationship between the tempo of skeletal age and the maturation process.

Early menarcheal girls are those in whom menarche occurs between the chronological ages of 10 and 12; middle-menarche girls experience menarche at ages 12 to 13; and late-menarche girls first menstruated at ages 13 through 15½.

A relationship appears to exist between skeletal maturity and sexual maturity as evidenced by menarcheal age. In general, the faster the rate of skeletal maturity, the earlier the skeletal age at which menarche occurs. Thus, for example, early-menarche girls are taller and heavier at age 9 than late-menarche girls.

Sexual maturation constitutes a determining factor in a person's psychological and social development. This maturation includes a physiological process that begins in preadolescence and continues actively until about age 19 or 20. Neither the school nor the family can shirk its duty to inform, support and encourage the adolescent in his attempts to adjust to a new set of psycho-social dictates.

In most adolescents, about 8 years elapse between the appearance of reproductive capacity and the socially acceptable expression of this sexual capacity in marriage. It is commonly recognized that in the context of modern sexual mores, the number of those observing this period of waiting or abstinence is steadily declining.

The school and the family must therefore provide the adolescent with reliable information and honest education about reproduction and contraception, given the fairly young age at which adolescents' heterosexual activities now begin.

According to a study by Colwell (1975, quoted by F. Harper 1980) on the sexual habits of young girls who became pregnant, sexual activity began at about age 13, the first experience with coitus occurred at about age 15.1, and pregnancy occurred at about age 16.5. The author also found that the risk of pregnancy increased in inverse proportion to the age of first sexual activity.

As mentioned above, the phenomenon of menstruation is considered a practical turning point for determining the degree of sexual maturation or sexual development in girls. If sexual maturity is interpreted as the ability to reproduce, menarche then becomes a very uncertain indicator. It has been known for some time that a period of sterility, of varying duration, follows menarche. In other words, for some time after menarche, conception is not likely to occur. The physiological bases of this period of sterility in adolescence have not yet been clarified, although the following reasons have been suggested as isolated or joint factors in post-menarcheal adolescent sterility: 1) immaturity of the ovaries, which have not yet commenced ovulation; 2) endocrine insufficiency, in which hormone stimulation of the endometrium (uterine mucus) is too small or irregular to produce ovulation but is sufficient to trigger menstruation; 3) non-preparation of the uterine wall, which is not physiologically receptive to implantation or nesting, or development, of the embryo, even when the ovary and endocrine system have reached maturity.

If we take the total population of adolescents and the high variability of all physiological parameters occurring in that population, one or the other, or all, of these hypotheses may be cited for a given subject. The list of possible causes of sterility in adolescents does not claim to be complete; as studies of the physiological bases of reproductive capacity advance, other causes will probably emerge, and be added to the others to clarify their significance.

In conjunction with this subject, Talwar (1969) studied the nature and duration of adolescent sterility in a Hindu population. The advantage of this study is that in the subject population, marriage occurs just before or immediately after menarche, thus allowing Talwar to determine the interval between consummation of the marriage and birth of the first child. The study covered 2,713 subjects. The author concluded that in some cases, adolescent sterility may persist until age 19. The percentage of sterile married women was 98 per cent at age 11, 9 per cent at age 18 and virtually nil at age 19. Although there are no intermediate data, these three points indicate a linear relationship between age and sterility among married adolescents. Since sterility is not 100 per cent at age 11, and declines regularly with age, every school system should be strongly encouraged to include in its curriculum appropriate sexual education courses before puberty. We will return to this subject later.

Studies on adolescent obstetrics are rare. However, several recent papers allow international comparisons. Hay and Boyd (1973) studied obstetrics in primigravidae in Jamaica, 16 years of age or less; Coates (1970) conducted the same study in North America among primigravidae 14 and under; and Sternadel et al. (1964) studied births in young Polish mothers aged 13 to 18. Hay and Boyd's study covered 226 subjects, compared in terms of obstetrical performance, with other, older primigravidae. They found no increase among the adolescent group in pre-eclampsia, haemorrhaging or anemia before labour compared with the older group. They did find that post-partum haemorrhaging is more frequent among adolescent primigravidae than their older counterparts. The rare Caesarean delivery is associated with a drop in frequency of foetal distress. They conclude that the normal progress of delivery in adolescents is probably attributable to good prenatal care.

The Coates study compared 137 deliveries among adolescents 14 and under with those of older women. It found that the following complications were more frequent in adolescents than in older women: acute toxemia, uterine dysfunction, fever, and cardiovascular anomalies in the child. These results are similar, to a degree, with those reported by Sternadel et al. (1964), although these two studies must be compared with caution. Sternadel et al. had to deal with improvement in obstetrical care, the discovery of antibiotics and the effects of the Second World War among many but not all of the subjects studied. They observed that premature births occurred in 16.1 per cent of adolescent mothers and 17.6 per cent of mothers aged 17 or less.

When compared with the two other obstetrical studies, Hay and Boyd's (1973) appears to indicate that pregnancy and delivery generally do not pose greater difficulties or dangers for adolescents than for older women, if good prenatal care is available. The 226 deliveries studied all occurred in Kingston University Hospital in Jamaica. The claim that Jamaican primigravidae are more mature than their North American counterparts and are thus obstetrically better prepared for delivery would contradict Tanner's finding that the lowest menarcheal age occurs in North America.

In these populations, where the primary concern is the health and well-being of both mother and child rather than the risk of social stigmatization of the mother, child and family, prenatal care is probably sought out early in pregnancy. This early start in prenatal care should produce good results since, as Hay and Boyd assume, they pave the way for a healthy delivery.

Too few school systems provide flexible programs suited to the needs of pregnant adolescents, thus forcing these girls to drop out of school, where they should have received understanding, confidence and support.

2. Secular Trends in Growth and Development

It has been established that for at least the last hundred years, there has been a striking tendency for children to become larger at all ages and to achieve sexual maturity earlier. This tendency is known as the secular trend. Aubenque (1957) plotted average height against chronological age for French university students by date of birth. At 17 years of age, subjects born in 1925 were almost 4 cm shorter than 17-year-old students born in 1933. While the gap between the two groups narrows considerably as age of the subjects increases, later-born students retain their height advantage at least through age 20. Similar trends are shown for American children (Tanner, 1970), with children in the age range of 5 to 7 years increasing by 1 to 2 cm for each decade since 1900, and children in the age range of 10 to 14 years increasing by 2 to 3 cm. Tanner has evidence which suggests to him that in North American populations which are most well-off, children are growing and maturing close to or at their fastest possible speed. Veli (1971) found that for Hungarian adolescent girls ranging in age from 10 to 16, 1) the total average growth increment in both height and weight was greater for girls who had reached these age groups in 1962 than for girls who had reached these age groups in 1947, and 2) the age at which the greatest increment in growth occurred had dropped.

A secular trend in the average age of menarche has also been observed. The most stunning trend is shown for adolescent girls in Norway; in this group the average age at menarche has decreased from 17.2 years in 1850 to 13.3 years in 1950. (Tanner, 1962) Similar secular trends have been established for adolescent girls in Sweden, Finland, Great Britain and the United States. Whether this trend is continuing in well-off populations is in doubt. Data from a study by Maresch (1972) appear to indicate (at least for the children covered by his study) a cessation of the secular trend for age at menarche, weight and height.

Hansman (1972), who suggests that the studies showing a secular trend in menarche may be an artifact, cites Maresch's study as evidence. Further evidence of the artifactual nature of the so-called secular trend in the age of menarche is presented in a table that shows the results of studies from 1832 to 1971 on the average age of menarche, and most importantly, the range of ages in each study over which menarche occurred. The earliest study, conducted on 450 female patients in Manchester, England, in 1832, yields an average menarcheal age of 14.7 chronological years, with the range over which menarche occurred running from 10.5 to 15.5 years, with an average of 13.1 years. What is significant to Hansman (1972) is that the lower limits of the range have not changed, while the upper limits have dropped. Of the eight studies presented, the lower limits of menarcheal age range from 9.5 to 10.5 years, while the upper limits range from 15.5 to 20.5 years. On the aggregate, the result is that the average age of menarche shows a drop from 1832 to 1971. Since the lower limits of the range have not changed, Hansman maintains that what has occurred is that more girls are apt to menstruate sooner than previously, probably because of better nutrition and medical care. She maintains that there is no clear evidence that present-day youth are experiencing pubertal changes at earlier ages. If this were so, then the range for the onset of menarche would have shifted to lower values. It is interesting to note that the lower limits of the range, which seem to have been invariant for 140 years, probably represent an inherent biological limitation in human populations concerning the maturation of the hypothalamus-pituitary gland-gonadal axis. The secular trend apparently is only a statistical, not a real, phenomenon. It will still be interesting, however, to follow further reports on average menarcheal age.

3. Psychological Effect of Physiological Changes

The radical changes taking place in the body during adolescence have psychological as well as physical implications for the individual. Ausubel used the term psychobiological in referring to the psychological consequences of biological change. In looking at this particular aspect of adolescent development, our attention is focused on the effects of physical growth on the concept of self, sexual identity and sexual behaviour of the individual, and the consequences of early or late maturation.

Hurlock observes that one of the most difficult developmental tasks during adolescence is the acceptance of changes taking place in body and physique. Dissatisfaction with appearance is generally greatest shortly after sexual maturity. The concern one feels at this time originates with the physical change but is influenced by a number of factors. The adolescent's image of himself, for example, can be greatly influenced by the attitudes within the family and among his peers. Hurlock has an excellent summary of the effects of body changes and the factors influencing these changes. (Hurlock, 1973)

1. Rapidity of Change -- Rapid growth and physical change so alter the body that the adolescent who cannot readily accept his new physique and revise his physical self-image may become overly self-conscious.

2. Lack of Preparation -- How much knowledge and forewarning the adolescent has of the changes taking place in his body will markedly influence his attitude toward the changes.

3. Childhood Ideal -- Any feature that greatly deviates from the adolescent's childhood ideal of himself as a grown-up will be a source of concern.

4. Social Expectancy -- The adolescent's attitude toward his body and facial features is influenced by what he believes the significant others in his life, especially parents and members of the peer group, think of them.

5. Stereotypes -- Body build or facial features associated with unfavourable stereotypes of the adolescent lead to unfavourable self-concept and antisocial behaviour.

6. Social Insecurity -- The adolescent knows that physical appearance affects social acceptance. A physical feature that is unfavourably judged will make the adolescent socially insecure.

Most adolescents seem to have idealized norms for physical appearance and skills. These are usually formed from culturally determined stereotypes of masculinity and femininity and marked variations from this idealized person can be quite serious to the adolescent. Discrepancies in the idealized self and the perceived self in terms of physical characteristics will often cause the average adolescent to be sensitive, even critical, of his changing physical self.

Conger (1977) cites studies to support observations that physical characteristics are mentioned more than any other characteristics in response to what one disliked most; likewise, Conger observes that "the adolescent who perceives himself as deviating physically from cultural stereotypes is likely to have an impaired self-concept." In general, girls show more concern about their appearance.

The major concern adolescents show about their physical development centres around three questions:

- Am I normal?

- Am I sex appropriate?

- What can I do to make my body come up to my childhood ideal? (Hurlock, 1973)

It is important to keep in mind that psychological attitudes can also influence the self-perception of physical appearance. Previous experiences may cause an adolescent to see himself as attractive or unattractive, strong or weak, masculine or feminine, irrespective of the actual facts of his adolescent physical appearance and capabilities. (Conger, 1973) Conger observes that guilty feelings about something such as masturbation may result in the adolescent finding evidence of physical abnormalities ranging from acne, circles under the eyes or fatigue or even deformities in appearance of the sexual organs, none of which have any objective base. A girl who has been told for years that she looks like a parent she does not admire may view herself as being unattractive even though she may be quite beautiful according to cultural stereotypes. (Conger, 1977).

The perceptions adolescents have of their physical appearance can work to their advantage as well. Overall self-esteem of the individual can be enhanced if the young person meets the cultural standards of physical appearance and ability and has the approval of peers and adults whose opinions he prizes. Girls tend to be more concerned about their physical development than boys and Conger suggests that this is because their outward appearance and their inner anxiety identified by Ausubel occurs as the result of the individual's reaction to his physical self. The more healthy, well-proportioned, strong and graceful his body and the more attractive his face, the less an individual will experience the tensions produced by change and the storm and stress of adolescence. This area of reaction to one's physical self is the source of much heightened emotion. McCandless (1970, 1979) maintains that the role of the body in social and personality development is something that has been neglected by studies of psychologists and sociologists. He thinks that these professionals may be naïvely optimistic about the environment and the socialization process and what they can do for human development under ideal circumstances.

Other physical matters of serious concern for boys and girls are:

1. mature height;

2. body shape;

3. weight, whether excessive or not;

4. facial proportions;

5. secondary sex characteristics.

Primary and secondary sex characteristics have a profound effect upon self-concept. A boy judges his masculinity in the Western culture particularly by the size of his penis and the extent of his pubic and body hair as well as his changes in height and weight. Virility is commonly equated with early maturity and size of the genitals. (McCandless, 1970)

Girls, to the extent that breast development and slimness are exalted by the cultural stereotype, may place an inordinate emphasis upon these physical features. "Body cathexis" (Hurlock, 1973) or feeling of satisfaction with the body is more important to girls than to boys. The girl who is unsatisfied with the transformation in puberty may develop feelings of anxiety and insecurity.

4. Other Physiological Phenomena

Changes in the cardiovascular and respiratory systems, as well as in metabolism, generally occur in conjunction with an individual's physical growth. These changes, and others that occur in the neural and digestive systems, play a vital role in conditioning the individual's behaviour. Changes in the circulatory system are also extremely important. During adolescence, the mass of the heart almost doubles; growth is more rapid in boys. Blood pressure and artery size also change. Until about 17 years of age, blood pressure increases steadily. (Cole and Hall, 1970) Between about ages 10 and 13, blood pressure in girls is slightly higher on average than in boys; after age 13, blood pressure in boys tends to be higher than in girls, but the average pulse in girls is slightly higher than in boys, at all age levels.

During adolescence, the digestive organs grow considerably. The lungs also grow considerably, especially in boys, since girls have smaller lungs.

5. Misconceptions About Growth in Adolescents

Blair and Jones (Purnell, 1970) identify several misconceptions about physical development in adolescents:

1. the universality of awkwardness in adolescents; they suggest that it is more an adult anticipation than actual; in fact, adolescents typically learn physical skills and body control with ease;
2. the idea that warm climates accelerate maturity; there is evidence that it is more likely to be affected by diet and health than climate;
3. the fear that vigorous exercise will damage the heart; Blair and Jones find that this assumption, based on the increase in size of the heart and the strength of blood pressure increases, has not been borne out by fact;
4. the idea that academically able youth are inclined to be "motor morons"; they assert that most evidence indicates positive correlation between physical and mental development.

6. Biorhythmicity of Consciousness

Quite often it is assumed a person's general level of awareness is relatively stable, with differences only between the states of sleep and wakefulness. There is, however, considerable evidence that the quantitative and qualitative aspects of sleep and wakefulness have regular and more or less periodic fluctuations which influence the level of consciousness. Certain functions which occur approximately daily, more specifically defined as having a reoccurrence pattern range of every 20 to 28 hours, are labelled circadian (circa diem, about a day). Ultradian cyclic changes are those that have a period of less than a day, while those that recur less frequently, with a periodicity of more than one day, are termed infradian. The last two terms have become common usage, even though logically it seems they should be reversed.

These rhythms influence consciousness both in sleep and wakefulness. The intended meaning of "consciousness" is not the level of abstraction and generalization, through which a person can become master of his own world, but rather a general level of perceptual awareness. (Ryle, 1943)

There is growing evidence that the rest-activity dimensions of BRAC* described by Kleitman (1963, 1969) form part of a 24-hour cyclic rhythm (see Figure 4), and that levels of awareness, perception, performance, fantasy, certain biological functions and undoubtedly many more aspects of daily life are strongly influenced by BRAC.

The 24-hour circadian rhythms influence almost all types of performance and bodily function, each seeming to have different peaks and troughs at different times of the day.

Kleitman (1939, 1963) noted that, on a series of different tasks, both performance and oral temperature followed a similar circadian rhythm, lowest in the early morning, improving (or rising) before noon, peaking in the afternoon, and then tapering, with temperature peaking later in the afternoon, about 6:00 p.m. There seems to be a close relationship between test performance and temperature.

Memory functions, on the other hand, appear to function best in the morning, when body temperature is low. (Blake, 1967; Baddeley et al., 1970; Hocket et al., 1972) Another very common phenomenon is the so-called "post-lunch dip", a decrease in performance and awareness which appears around 1 p.m., independent of both food intake and body temperature, although food intake may play a role. Several cultures solve this problem with a siesta.

A series of studies (Browne, 1949; Bjerner et al., 1955; Aschoff et al., 1972; Fort and Mills, 1972) have shown that a variety of tasks had their lowest vigilance level and poorest results in the early hours of the morning, between 1:00 and 3:00 a.m. It appears that all body functions fluctuate throughout the day, and that we are different people at different times of the day. (Luce, 1971) There is, in addition, an amazing complexity and interfacing of different biorhythms. Circadian rhythms (Figure 5) may be summarized as having two dips of consciousness, in the early morning and early afternoon. There are also two zenith points of functioning: memory in the morning, and a later afternoon or evening peak for apparently different functions. These are superimposed on the circadian rhythms in Figure 4.

Finally, while the above is representative of the average population, there are always individuals who are different, such as the night owls, who perform best at night.

What are the applications of the knowledge of biorhythmicity to adolescent education? The problem is precisely that this is not known, nor is much research being done to unveil these important mysteries. It is obvious that cyclical variations do play an important role in performance and awareness. Whenever the natural clock is deviated from, deterioration of some sort occurs. On a very general level, the effects of jet-lag and shift-work are well documented. (See Colquhoun, 1972) A study on sleep patterns, performance and mood (Taub and Berger, 1973) noted that changes in length or timing of sleep produced detrimental results which seemed to be due not to changes in the actual sleep parameters, but to the disruption of an established circadian rhythm of sleep and wakefulness. Mere phase shifts in the sleep-wake cycle have resulted in changes in sleep stage patterns (Berger et al., 1971; Webb et al., 1971); in the cyclicity of body temperature and heart rate (Hauty and Adams, 1966; Klein et al., 1971), and in neuroendocrine processes (Weitzmann et al., 1968).

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* BRAC = Basic Rest-Activity Cycle

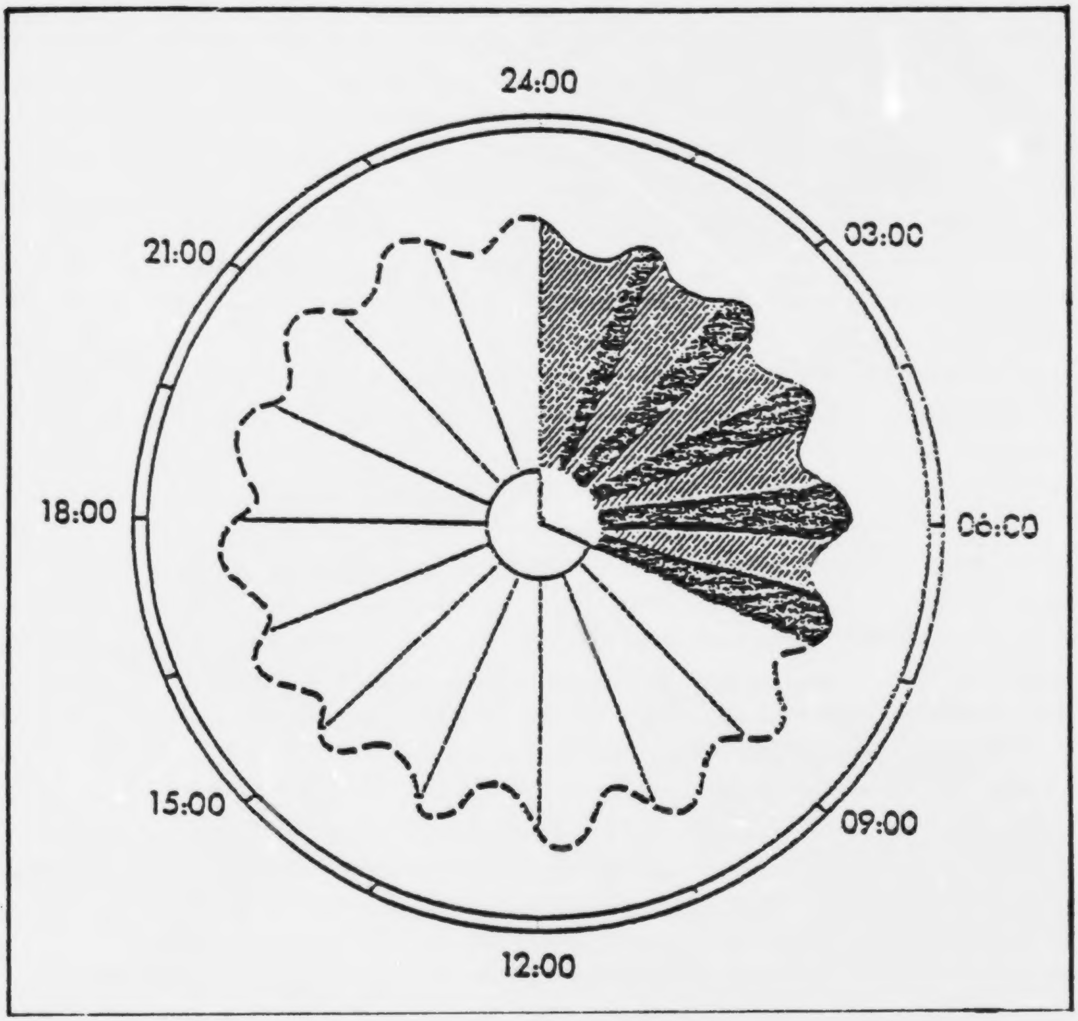

Figure 4. Ninety-Minute Alternations of the Basic Rest-Activity Cycle (BRAC)

These rhythmical fluctuations are especially well documented for sleep, in which a typical person alternates between NREM (broken line) and REM (black). During the day, there is a continuous rise and fall of consciousness, such that high activity peaks occur approximately every 90 minutes, in phase with nocturnal REM periods.

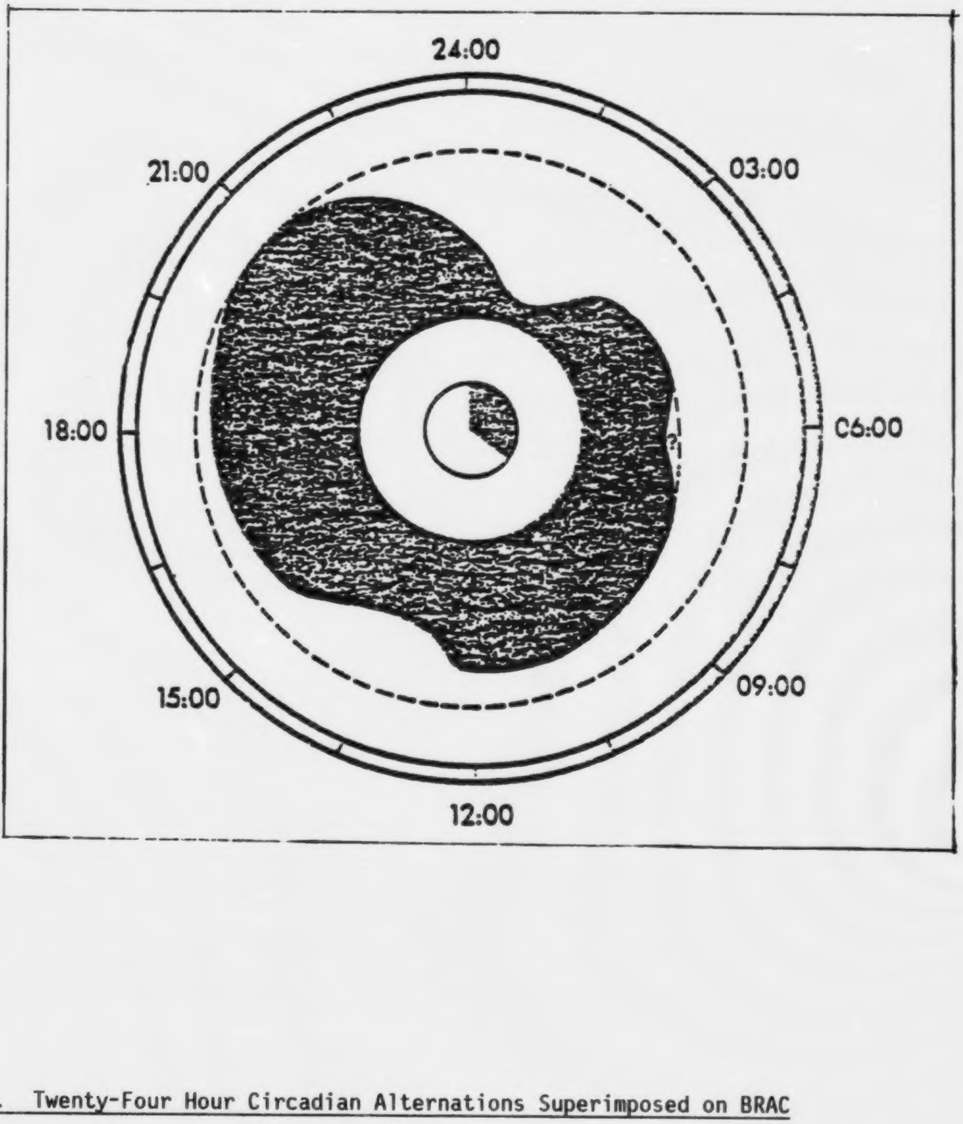

Figure 5. Twenty-Four Hour Circadian Alternations Superimposed on BRAC

Consciousness and performance are at their highest between 7 and 9 p.m., then decrease gradually to the marked dip at 1-3 a.m. There is a second possible nadir at 6 a.m., followed by a gradual increase in the morning, which is temporarily halted by the post-lunch dip. The increase continues, reaching its maximum levels in the late afternoon or early evening. Not illustrated is the morning peak for memory functions.

Stress and personal conflicts have been known to upset, or desynchronize, the biological clock.

Certain concepts can be accepted as a starting point. Consciousness or awareness is not static, although its periodicity is relatively stable. There are both inter- and intra-individual differences, with quantitative and qualitative variations, leading to the observation that one cannot demand a rigid consistency of performance or awareness.

Theoretically, it seems that the awareness level would be dependent on the synchronization of the many biorhythms, those known and those not yet known. There is ample room for research here.

More concrete applications may be these: students (and teachers) may be taught to be aware of their own inherent body rhythms, and how to use and control them. The mere acceptance of the effects of normal periodicity may in itself be of tremendous value for peace of mind. A person who can accept his lows as well as his highs as part of his ordinary life-rhythm will be Better able to cope with them, and will have the compassion and/or necessary firmness to understand and deal with the cyclicity of others. In this context, teachers should be capable of recognizing the effects of biorhythm desynchronization.

This section on biorhythmicity of consciousness underscores the need for knowledge, and application of that knowledge, of biorhythmicity at all levels. Adolescence, with its multiple biological, educational and social changes, seems to be a period of biorhythm transitions, influencing and influenced by the environment. Even though little research has been done in this area, it appears that it is of the utmost importance for understanding, educating and interacting with students of this age group, and for establishing relations with adolescents.

7. Educational Implications

A brief survey of the physiology of adolescents reveals that the area is relatively unexplored, except in a very few areas such as growth in height, in weight, and the achievement of sexual maturity. Secular changes in these items have been observed for at least 150 years. Average values for these adolescent physiological events are presented, as are the time ranges over which these phenomena occur. The various physiological events are more or less strongly linked to each other. Linkage of physiological events to acquisition of intellectual powers in adolescents has been the subject of little research.

1. Adolescence is a time of substantial change in physiology and psychology. In the biological sense at least, each individual adolescent is at any one instant a wholly integrated human person; that is, the individual adolescent is operating as an efficient biological machine within the limits of his/her evolutionary and environmental background, is achieving those biological events that he/she should be, and is accomplishing them in an integrated manner. If this statement were not true, no adolescent could survive to maturity.

2. Above all, each adolescent must be treated as an individual, which he or she most assuredly is. The number of physiological events associated with adolescence, the great range in time over which these events occur, and the great variation in linkage between the multitude of physiological events in adolescents establish that at the biological level at least, each adolescent child is unique, at each moment of his or her life.

3. Special care must be taken when grouping adolescents in physical education classes. Pitting physically immature and mature adolescents against one another in contact sports may be dangerous. One should be cautious not to impose severe limits on the immature adolescent because of the possible distortion of self-image that such a limitation may create.

4. All teachers should receive appropriate training in human physiology. The following items concerning adolescent physiology must be stressed: 1) the acquisition of physical and sexual maturity as the basis of adolescence, 2) the changes involved in the acquisition of physical and sexual maturity, and 3) the great variability in the timing of adolescence.

5. Another aspect closely linked to the subject of growth and physical development of adolescents is maintenance and improvement of health, and the preventive measures society must take to ensure the physical well-being of its members. Schools should assume special responsibility for health education. Programs of physical education and hygiene should be given high priority among the various educational activities. There is a shortage of programs specifically aimed at areas known to cause serious health problems over a lifetime, such as smoking, drugs and alcohol, obesity, poor eating habits, lack of exercise, etc. In a survey of literature on the subject, Rothman and Byrne (1981) found that little research has attempted to measure the effectiveness of school programs aimed at reducing and eliminating behaviour detrimental to health. Some studies show that educational programs aimed at changing attitudes, as well as providing information, achieve the most positive and lasting results.

Schools must therefore offer a curriculum based on the individual as a whole, and his environment. "They must remember that the whole individual is the target of education, and the educational process therefore encompasses all aspects of both human nature and the environment." (Ramunas, 1960)

III. INTELLECTUAL DEVELOPMENT DURING ADOLESCENCE

Introduction

Intellectual development during adolescence, according to Coleman (1980) is one area in the maturing process that seems less apparent to observers. While physical changes are naturally the most obvious, adolescence also involves intellectual changes that will have a marked influence on the adolescent's general behaviour. It is this intellectual growth that will allow the adolescent to begin questioning ideas, attitudes, and values in an attempt to define his own relationship to these realities. New intellectual components emerge and gradually raise questions that previously escaped the adolescent's attention. Time takes on new meaning; personal identity begins to take shape; one's place in society slowly becomes clearer; in short, a whole range of new dimensions appear for the first time. Educational programs must take this into account. They must be defined in concrete terms for the adolescent himself, for those around him, and for his immediate environment. It may not be an exaggeration, in fact, to claim that the intellectual changes taking place so overwhelm the adolescent that he loses sight of himself for a time. In fact, parents and educators have specifically admitted at times that they no longer knew their children or students.

This third part deals with intellectual development during adolescence. A clear and accurate understanding of intellectual development during adolescence is very important, especially for parents and teachers, as well as for anyone who must deal with the experience of adolescents. The first chapter in this part will briefly examine the nature of intelligence, and then a few basic concepts on which Piaget based his theory of intellectual development. The chapter will then focus on the key area of analysing the development of formal thought during adolescence. A few very specific consequences of this development, adolescent egocentrism and idealism, will also be discussed. And finally, this study would not be complete without introducing the main educational implications directly resulting from the potential for intelligence with access to formal thought.

The following chapter will discuss Vygotsky's view of intellectual development and the educational implications of his theory.

Chapter 5 is devoted to a study of the influence of percepto-cognitive styles on intellectual functioning in young adolescents. Two aspects of cognitive style will be examined: reflectivity-impulsivity and field dependence-field independence.

Finally, the quantitative aspects of intellectual development will be studied in Chapter 6.

CHAPTER 3 - THE PIAGETIAN CONCEPT OF COGNITIVE DEVELOPMENT

1. The Nature of Intelligence

Researchers studying the subject of intelligence generally try to distinguish between the quantitative and qualitative aspects of intelligence. However, this vital distinction is not always drawn with any great clarity. If, for example, someone is said to be intelligent and this intelligence is associated with the fact that this person is brilliant, very successful and very quick to comprehend, this generally refers to the trend that measures intelligence by IQ tests. (Forisha-Kovach, 1983) But when a person is said to be intelligent because he possesses the mental skills for adjusting to and dealing with the countless situations presented by the environment, this refers to a rational, intentional and directional procedure. The first example refers to quantitative intelligence, that measured by tests. The second actually involves qualitative intelligence, which will be studied in this first chapter of Part III.

In the qualitative view, intelligence is seen as "the ability to adapt to the environment and gain from the experience". (Lefrançois, 1981) Defined in these terms, the study of intelligence allows educators to avoid needless exposure to the many controversies that Lefrançois (1981) says always arise when the concept of intelligence is introduced. We are not interested here in challenging or denying the contribution of research in this field, but we do believe teachers require above all an excellent understanding of the evolution, development and growth of intelligence in children and adolescents.

It is the study of qualitative intelligence that allows teachers to clearly recognize the appearance of abilities that allow the child or adolescent to explore the world. By filling this role, the teacher gradually becomes an indispensable guide when, at the onset of adolescence, the person begins to think about what is happening to him in order to structure and better organize his experience.

It is undoubtedly this qualitative intelligence Jean Piaget is referring to when he states that "intelligence is essentially a system of living and active operations. It is the most advanced mental adaptation, that is, the indispensable instrument for interaction between the subject and the universe". (Piaget, 1967) Thus, in mental organization, any act or behaviour is an adaptation or readaptation. This is primarily so because when a need appears, the equilibrium between the organism and its environment is upset. Individual action then attempts to eliminate this uncomfortable situation. Interaction then occurs between the subject and the outside world. This interaction places the subject on the path toward a new equilibrium and readaptation of the organism. Other behaviour will arise, and the same dynamics will again enter into play.

These numerous successive adaptations confirm for Piaget that intelligence can only be the individual ability to change reality using information supplied by the environment and the outside world. Piaget adds that readaptations are only made possible by feedback generated by the changes the organism has made to reality. When the organism is again temporarily thrown off balance, it will attempt to re-establish harmony with the outside world.

In Piaget's view, intelligence and intelligence alone, disregarding hereditary or acquired adaptations, can explain the person's evolutionary pattern in the constant search for an equilibrium that is regularly upset by the endless stimulations coming from the environment. A form of behavioural structuring emerges, and this is where Piaget introduces the concept of cognitive functioning. When learning, comprehension or reasoning occurs, there is an interaction that consists of a structuring of the relationships between the organism and its environment. And since the many dimensions surrounding personal growth normally suggest relationships of constantly intensifying quantity and quality, we can expect that "each structure must be conceived as a special form of equilibrium that is reasonably stable in its limited area but becomes unstable at the limits of this area". (Piaget, 1967)

It is precisely this phenomenon that reveals the evolution of intelligence or, if one prefers, the ability to adapt. The more development progresses, the broader the range of clearly perceptible adaptations "through increasingly ordered and complex forms". (Dolle, 1974) The child's intelligence starts with adaptations in their simplest forms. Broadening experience gradually allows for specific, concrete, and formal operations that achieve their full potential in the adult. Dolle (1974) supports the argument that "if intelligence is adaptation, it is a long way from childhood to adult intelligence. Yet the latter is the heir of the former".

2. Jean Piaget's Basic Concepts

It would be foolhardy to attempt to study Jean Piaget's theory of cognitive development without specific knowledge of a few basic concepts of this theory. Piaget's entire theory is built around certain concepts, and any ambiguity over these concepts could result in misconceptions of cognitive growth. The interaction between these concepts is so intense that a thorough understanding of their meaning and scope is vital. A coherent and structured system will emerge with concepts teachers can easily recognize. The following concepts deserve special attention: scheme, operation, adaptation, assimilation, accomodation and equilibration.

1. Scheme

Piaget generally defines a scheme as a series of actions "common to many repetitions or applications of the same action". (Dolle, 1974) In other words, a scheme is a model of established behaviour that can be generalized and transposed. When sucking, an infant refers to what is called an established scheme, since there is an internal behavioural model that dictates the appropriate action. Since the child also reacts constantly to environmental stimulations, the original schemes will be modified qualitatively and quantitatively, and may be combined with other schemes. The child is observed to gradually use many schemes and this leads Dolle (1974) to state that "in the final analysis, to act is to co-ordinate schemes with each other or combine them into a system governed by general laws". Finally, because schemes encompass all human activity, Piaget, to discuss infants, introduces the concept of sensori-motor schemes, while adolescence involves primarily cognitive schemes.

2. Operation

"Operation is a co-ordination of a family of actions on the concrete level at first, and then on the formal level." (Nicolas, 1976) Piaget explains that this involves the possibility of transforming an action from one structure to another: a reversible action. It is important to realize that an operation extends further than a scheme, which is only a reference to what is already present in the organism. An operation takes place when the child becomes capable of transforming an action that requires reference to something other than existing schemes. For example, Muuss (1982) reports that a child's memorization of some formulas for application to identical problems constitutes a scheme, not an operation: this is pre-operational thought. But when a student solves a problem in a different context, and draws links between the elements present or uses different symbols, he can be said to have demonstrated operational thought. This thought evolves gradually and appears under what Piaget calls concrete operational thought (7-11 years) and eventually gives way to formal operational thought in adolescence.

3. Adaptation

Piaget (1967) states that adaptation is essentially "an equilibrium between the actions of the organism on the environment and the inverse actions". The organism naturally tends to modify its behaviour in response to environmental stimuli. This adaptation trend is an integral part of the very nature of every living organism, regardless of species. It should be noted, however, that the methods of adaptation vary between species, individuals and development periods. (Thornburg, 1975) Adaptation thus becomes a very specific response to the situation of disequilibrium generated by the person's action on the environment or by the environment's action on the person. Many examples, both biological and intellectual, can serve to illustrate this reality of organismic adaptation. An infant who cries because he is hungry, a schoolgirl who tries to find the right answer to a question, and an adolescent looking for the solution to a problem are all examples of organisms striving to re-establish the equilibrium momentarily upset by the appearance of a new situation. Since the concept of adaptation is basically an exchange between two parties, Piaget now presents the mechanisms that allow adaptation to function: assimilation and accomodation.

4. Assimilation and Accomodation

It is essentially the equilibrium between assimilation and accomodation that, according to Piaget, defines adaptation. But more must be learned about the action of the organism on the environment and the action of the environment on the organism if we are to understand the precise nature of adaptation. The concepts of assimilation and accomodation are an attempt to provide the necessary information.

Assimilation is "the action of the organism on the objects surrounding it, insofar as this action depends on previous behaviour towards the same, or similar, objects". (Piaget, 1967) This means that the organism, when confronted with a new situation from the environment, refers to existing internal schemes to alter the situation. Thus, assimilation is essentially an action on the environment insofar as that action is developed from data already known and already integrated by the subject itself. Assimilation is therefore the incorporation of the external reality into structures already present in the organism. The baby who puts every new object given him into his mouth is referring to a structure already present within him -- orality -- in order to deal with a new situation. The schoolgirl and adolescent who, when faced with a new problem, refer back to data already known and structured in them, are also proceeding by assimilation.

The opposite occurs in accomodation. Here, it is the environment that transforms the organism. Accomodation occurs "each time a modification is made in assimilation schemes under the influence of external situations". (Nicolas, 1976) Under pressure from the environment, the organism tends to transform and modify itself, and take on new structures to enable it to deal with the external reality. Accomodation includes a dynamic process in which the organism's structures, under the influence of the environment, accept transformations aimed at eliminating the disequilibrium generated by the presence of a new situation. A young child, shown that a pencil is not meant to be put in the mouth but is used instead to mark on paper, who then attempts to do so, proceeds by accomodation. The same dynamic process is characteristic of someone who, when faced with a new reality, agrees to modify established schemes to deal with another way of seeing what the environment has placed before him.

5. Equilibration

Equilibration, Muuss (1982) explains, "is defined as a compensation for an external disturbance". This means that a certain harmony must exist between the many assimilation and accomodation movements. An organism could not evolve or develop if it functioned by assimilation alone. Similarly, no organism could tolerate an influx of accomodations without being able to assimilate, integrate and reuse them. Equilibration allows the organism to spread out the use of what it has acquired, and to open itself to new experiences. The function of equilibration appears essential and it is very important for teachers to know the scope of equilibration. In other words, there should be no encroachment of assimilation on accomodation because the child in this case would refuse to change anything in himself and would only wish to refer to what is familiar. Conversely, accomodation must not overstep its rights; otherwise, the organism would only absorb, and not be able to structure, integrate and reuse.

The end result is that intellectual development is a gradual movement from one structure to another. An equilibrium is upset to make way for a new, more refined, more complex and more specific equilibrium. Here lies the strength of Piaget's theory, since "intellectual operations do not function in isolation, but are reorganized by principles of reorganization in relation to the total system". (Muuss, 1982)

3. Stages of Intellectual Development in Children (0-11 Years)

According to Piaget, the development of intelligence progresses from childhood to adulthood in accordance with an invariable sequence of four stages. (Ingersol, 1982) To reach the highest stage of intellectual development, a person must invariably pass through all of the stages in proper order, although the speed of passage may vary for different individuals.

1. Sensori-Motor Stage (0-2 Years)

Intelligence in children from birth to two years of age may be described as sensorial and motor intelligence. A young child's understanding of the world is proportional to the degree of sensations he obtains and the degree of activities deployed in the world around him. That is why the child's world is limited to hic et nunc reality, because he is unable to imagine what he cannot see or touch. The primary characteristic of a baby's state is the present, the world of right now. His thought is termed egocentric because nothing exists beyond what his senses reveal to him. No scheme of permanence is yet established and, as Lerner and Spanier (1980) report, cognitive development at this stage may be described as "out of sight, out of mind". However, the accumulation and repetition of sensori-motor acts gradually introduce the child to the permanence of the object, through the process of internal imagination. Since "the conquest of the object" (Elkind, 1967) is therefore a major achievement at this stage, the child can reach the threshold of the next stage.

2. Pre-Operational Stage (2-7 Years)

While the sensori-motor stage allows only for direct interactions with the environment, in the pre-operational stage, the child becomes capable of handling symbols that represent the environment. (Phillips, 1975) The world of words and images expands considerably and the use the child can now make of them becomes different. The child now finds it easy to imagine something or someone not present. Children's games amply illustrate the growth in this ability, i.e. a better internal imagination of what is no longer transmitted by the senses. Numerical retention has not yet been acquired, reversibility of action cannot operate and role taking is not yet possible. It should also be noted that during this stage, the child conceives a much more stable world around him and can deal mentally with past, future and present situations. This intelligence, however, still cannot do everything, and major limits are still imposed.

3. The Concrete Operational Stage (7-11 Years)

An operation, as we have already shown, "is a co-ordination of a range of actions". (Nicolas, 1976) Between 7 and 11 years, the child becomes capable of handling objects, forming relationships between them and organizing them by height, number or colour. There is something special about this ability, however, in that it is said to be concrete. This does not mean that the child must necessarily see and touch the objects to solve a problem. In fact, he can quite adequately attack a problem with imaginary objects, as long as what he is imagining has a concrete reference. (Thomas, 1979) The ability for logical reasoning, still at a concrete level, emerges slowly and allows the child to perform operations that were impossible in the preceding stage. Thus, a greater mastery of the concepts of conservation and reversibility introduce the child to much more specific discoveries; the possibility of classifying objects appears, and some problems of symmetry and reciprocity can now be solved. It should be remembered, however, that concrete thought is still marked by egocentrism (Elkind, 1967) in that the child is "incapable of distinguishing between knowledge obtained by experience and knowledge obtained solely by thought". (Lerner and Spanier, 1980)

Finally, Piaget states that a general characteristic of concrete thought is the fact it remains essentially attached to empirical reality and only what is possible becomes accessible to the child who has reached this stage.

4. The Stage of Formal Operations

With entry into the stage of formal operations, the adolescent's relationship with himself and the world around him changes substantially and takes on proportions not experienced before. Although it is primarily a developmental period, adolescence is a period between childhood and adulthood that attempts to lay the foundations for adult functioning in increasingly specific ways. Thus, childhood subordination gives way to independence similar to that of adults. The adolescent "launches the construction of his life's program in order to play a role in society", (Nicolas, 1976) and this life's program is accompanied by a will to work on building his personal identity. The relational and social dimensions of adolescents expand, become structured and solidify. Soon a feeling of belonging to a particular social group becomes much more important. On the emotional level, profound changes make up a large part of the adolescent's experience. Other important physiological and psychological changes also show an evolution is taking place that, for the first time, requires the adolescent to understand what is happening to him. Briefly, maturation is at work and normally generates attitudes, behaviour and dispositions that require a different view and greater executive independence.

The emergence of this new behaviour and these new special attitudes "presupposes the existence of specific intellectual instruments". (Nicolas, 1976) The adolescent realizes first that certain functions are emerging in him and second that the use of these new functions is now possible.

What are the characteristics of formal operational thought during adolescence? Specifically, what does this new form of thought allow? If Elkind (1967) defines the formal operational stage as "the mastery of thought", how do we define this mastery here? Several distinctive traits of thought emerge during adolescence and it is essential that one understand their nature and scope.

1. The Passage from the Concrete to the Abstract

To solve a problem, a child uses the observable and empirical because his level of reasoning does not allow him to move away from the concrete. The adolescent, on the other hand, can move further away from the observable: "he reorganizes it and places it at a higher level". (Adams, 1980) The adolescent's thought is enriched and reaches a level of abstraction that opens the way to theoretical constructions, more immaterial ideas and the relationships between these ideas. Purely verbal abstractions are now possible and reference to the empirical or concrete is no longer necessary. Formal thought thus allows adolescents to "leave the objective world behind them and enter into the world of ideas". (Muuss, 1982)

2. Hypothetical-Deductive Thought

It is during adolescence that young people begin to realize there are shortcomings in their understanding of reality. They therefore seek to understand these shortcomings through hypotheses, by creating models that differ from those presented by the environment. Because direct contact with things, events and people is no longer necessary for the functioning of thought, the adolescent can imagine everything through hypotheses. When faced with a specific problem, he can consider the various possible solutions, compare alternatives and even test possibilities against each other: this is the emergence of hypothetical-deductive reasoning. This reasoning is characterized by use of "if ... then ..." thought and thus corresponds to a form of logical and scientific thought. (Lerner and Spanier, 1980)

It is the emergence of hypothetical-deductive thought that allows the adolescent to subordinate the real to the possible. In fact, Dolle (1974) reports that examination of experience is not based solely on concrete data, but also on "elements taken as propositions". The actual nature of facts, things and people is altered to generate a whole series of hypotheses which the adolescent is now able to test. This is probably why Dolle (1974) considers formal operations of thought second power operations.

To deal effectively with all aspects of a problem, an adolescent must be able to "transform (i.e. change or reorganize) the problem to take into account all possible forms". (Lerner and Spanier, 1980) Formal thought equips the adolescent for such transformations, which Piaget (1958) calls the INRC group. "In the INRC group, with each 'I' propositional operation or identical operation can be associated its 'N' opposite, or negation, its 'R' reciprocal and the opposite of its reciprocal or 'C' correlative operation." (Tran-Thron, 1972)

The co-ordination of these transformations shows that the adolescent's thought processes can now move in any direction to establish relationships between hypotheses and facts and to adjust his ideas if necessary. This movement reveals that the adolescent has freed himself from the concrete and that the foundations of much more flexible thought are now being laid.

3. The Perception of More Abstract Concepts

Formal thought allows an adolescent not only to ask questions in hypothetical form, but also to function at a higher level. This consists of the perception of much more abstract concepts, that is, in more speculative and ideological intellectual operations. This is what happens when an adolescent engages in discussions that require abandoning the concrete and that involve a very specific network of ideas. This also occurs in adolescents who can easily follow and even occasionally criticize adult conversation centred primarily on ideological themes in which the abstract and speculative predominate. Piaget emphasizes that this type of reasoning involves operations that produce "thinking about thinking, statements about statements or more significantly, operations on operations". (Muuss, 1982)

4. Greater Concentration

Development of the habit of sustained attention is impossible at the stage of concrete thought. With formal thought, however, the adolescent becomes capable of concentration that at times is surprising. He can cut to the heart of a subject without being distracted by accidental, accessory or external information. The superficial and sensational aspects of a problem diminish considerably to make room for a logical and systematic understanding of real data. Conclusions are not normally advanced unless they are the result of a mental process in which reflection dominates. The typical example reported by Piaget to illustrate the potential in adolescents for much greater concentration is: "Edith has darker hair than Lili. Edith's hair is lighter than Suzanne's. Who has the darkest hair?" (Piaget, 1964)

Because a child cannot concentrate on several possibilities at the same time, he cannot solve this problem. An adolescent, however, because of the amount of attention he can maintain, is capable of considering several variables simultaneously, measuring them and checking the accuracy of his conclusions.

It should be noted, however, that this increased ability to concentrate is not automatic with the onset of adolescence. This ability develops and the ability to organize one's thoughts in a more rigid and systematic way increases gradually.

5. More Sophisticated Explanations

Gradually the adolescent becomes a thinker. While a child is comfortable describing things and events, an adolescent is no longer content with simple description and becomes much more explanatory. He tries to determine the functions of elements, and discover the applications so he can formulate predictions. To do this, thought must literally detach itself from the concrete and be able to establish relationships between the dimensions of a phenomenon and other dimensions. Analogy often becomes necessary to explain things and the adolescent, unlike the child, can use analogy effectively. Finally, because he can now resort to explanation of events, the adolescent will proceed further and formulate general principles that allow him to make generalizations and predictions for related or similar situations.

6. Understanding Metaphorical Content

The child is so bound to the concrete that statements such as "a blanket of snow covered the ground" or "a boat was ploughing through the sea" (Santrock, 1981) are hard for him to understand. However, these metaphorical relationships are accessible to the adolescent because his intellectual development allows him to understand figures of speech. While the child pays most attention to the literal meaning, the adolescent can gradually use phrases or words in a different context. The use of metaphor thus becomes common and the symbols used to compare things, people and animals are frequent. So while fables and parables probably elude a child's grasp, they become clear and take on full meaning in an adolescent's formal thought.

7. Awareness of Time

Because formal thought allows for an overall view of things, events and people, awareness of time also undergoes considerable change in adolescents. It was primarily Kurt Lewin (1939) who suggested that in adolescence, temporal perspective becomes a variable whose dimensions must be emphasized. With formal thought, the adolescent's psychological field expands. Time perspective focuses and differentiates, and the adolescent is now able to conceptualize time. Although "a child thinks of time in terms of days and weeks, an adolescent must measure future plans in terms of years". (Bedard, 1978) This triggers more serious reflection over the value of personal aspirations, over society's expectations and over the choices that will soon have to be made. Furthermore, because the concept of time has been articulated, an adolescent will find it easier to understand the past, and history thus takes on a new face. Even personal history, which a child cannot understand, becomes significant for an adolescent who draws conclusions and implications from it that may influence the future. Finally, it is important to note that the broadening of the time perspective may generate uncertainty and ambivalence when faced with developing and carrying out specific plans.

8. Creation of Ideal and Utopian Models

The intellectual gymnastics demonstrated by adolescents are sometimes surprising, but understandable. They can give free rein to their imagination to "counter the concrete reality of the moment". (Santrock, 1982) They construct hypothetical functional models for themselves or others, theorize easily about everything and, in short, speculate to their hearts' content. Muuss (1982) points out that formal thought enables one to understand and even form theories that, in the adolescent's logic, may change society. Political, religious and intellectual aspects are compared to almost utopian ideals. Despite this lack of realism, adolescents appear to feel quite comfortable in this mental framework. There is, of course, a danger that these mental images will become so oppressive as to prevent the adolescent from maintaining vital contact with reality.

5. Consequences of the Appearance of Formal Thought in Adolescents

The changes just discussed in adolescent thought have serious consequences. It is perfectly logical for an adolescent to develop attitudes and behaviour directly generated by these profound intellectual changes.

The wonderful novelty of formal thought is the ability to subject the real to the possible. Phillips (1975) points out, however, that "introduction to possibilities has curious side effects". Among these, egocentrism probably has the greatest effect on the adolescent and is most noticeable to those who are watching him grow. We will also examine another consequence, very closely linked to egocentrism: adolescent idealism.

It is very important, however, to note that these manifestations of egocentrism and idealism are by no means abnormal during adolescence. In fact, they are the best evidence of thought that has moved away from the concrete operational stage and evolved to the stage of formal thought. At this stage, it would actually be abnormal for an adolescent not to show any egocentrism or idealism.

1. Egocentrism

Piaget stresses that adolescent's pass through a phase in which they assign limitless powers to their thoughts and even believe their ideas might actually change the world. This is clearly a form of cognitive egocentrism. (Piaget, 1958)

Formal thought allows the adolescent to engage in reflection, abstraction and manipulation of possibilities. But at the same time as the adolescent develops the ability to think about his own thoughts, he also becomes very aware of himself, his person and his ideas. "He becomes so aware of himself that he actually believes that others are also obsessed with his appearance, his ideas and his behaviour." (Rice, 1975) And since adolescence is a period when physical, intellectual and social changes are very marked, it is not unusual for someone experiencing these changes to believe those around him notice them as well. Since the adolescent himself is directly affected by these changes, it appears to him that others are just as directly involved. This, of course, is not the case. Nonetheless, the adolescent's egocentrism occurs precisely at the level of this incessant preoccupation. In other words, although the adolescent is now "more capable of understanding the views of others, he is still tempted to believe that others share his perception of himself". (Ingersol, 1982)

This form of egocentrism manifests itself in two ways, according to Elkind (1978). First, because he believes everyone else is looking at him and that he is the centre of attraction, the adolescent believes he is on stage; he surrounds himself with "an imaginary audience" or he imagines he is being watched, observed, even spied upon. He is primarily concerned with his personal attributes, physical traits, and specific skills. Elkind (1978) reports that this is why adolescents frequently dream up fantasies in which an imaginary audience applauds their artistic, academic or athletic prowess.

This stage is short-lived; as soon as the adolescent realizes with time that each human being is preoccupied with his own concerns, the imaginary audience disappears and is replaced by a much smaller but much more real audience.

The second manifestation of this cognitive egocentrism is the "personal fable". (Elkind, 1978) This is simply "a story that the adolescent concocts about himself, but which is untrue". The adolescent, with his increased self-awareness, believes he is unique, invulnerable, important and indispensable. He even believes that "his experience is unique and nothing similar has ever happened to anyone". (Florisha-Kovach, 1983) The adolescent thus becomes the hero of his own story and entertains all sorts of fantasies about himself, some of which adults may find difficult to accept. Elkind (1978) gives the example of a girl who tells her mother she cannot know what it is like to be in love.

Thornburg (1975) states that these two manifestations of cognitive egocentrism -- the imaginary audience and the personal fable -- clearly illustrate the real but short-lived "cognitive distortions" that accompany normal adolescent growth. The adolescent showing these manifestations should not, however, be considered neurotic. In fact, he is responding to the invitations of his intellectual development but adjusting as much as possible to the new situations of his organism. Furthermore, gradual changes will allow the adolescent to eventually abandon this egocentrism. First, the differentiation between his own preoccupations and those he believes to be the concerns of others will become increasingly pronounced; second, a more definitive integration of his own emotions and the feelings of others is occurring.

2. Idealism

Adolescent idealism is another important consequence of adolescent intellectual development. Although what we call personal experience still makes a clear distinction between the positions of adults and adolescents, formal thought places adolescents and adults on the same level in terms of intellectual functioning. The adolescent uses his power for thought to participate in "the ideas, ideals and ideologies of adult society through a certain number of verbal symbols, not yet in his possession during childhood". (Piaget and Inhelder, 1958) In so doing, the adolescent becomes aware of the reality of the adult world and imagines what that world could be and become. In effect, he is able to subject the real to the possible in circumstances that at times can be fanciful. "He compares the possible with the existing, discovers that the existing is less perfect than the possible, and becomes a critical observer of things as they are and becomes over-critical in the eyes of adults." (Rice, 1975)

We therefore witness the development of all sorts of ideals in a wide range of areas. Because he is aware of what is happening, he dreams of what could happen. And because he knows he is capable of conceiving ideals, he starts to believe he can achieve them. Because he believes his thought to be all-powerful, the adolescent "assigns himself, with all modesty, an essential role in saving humanity". (Piaget, 1964) He takes himself seriously and offers solutions to the most complex problems. This is a "naïve idealism" (Flavell, 1963) that is a frequent factor in conflicts between adults and adolescents. The adults' pragmatism has little tolerance for adolescents' idealizing without taking concrete steps to achieve their ideals.

Elkind (1968) claims this idealism is verbal only, because the adolescent's commitment to causes fails to materialize. Gradually, the adolescent returns to reality when well articulated commitments re-establish contact with the activities required to achieve some of these ideals.

6. Educational Implications

When faced with the emergence of formal thought during adolescence, it would be unfortunate if teachers were not aware of some educational implications that arise directly from their role in adolescents' intellectual development. Many implications can be discovered, but the discussion here will be limited to the most important ones.

1. Respect for Genetic Time

It would be foolhardy to think that the development of intelligence occurs instantly. It is actually a gradual process. Genetics obeys its own laws and this process involves an evolution and sequence that may be laborious, slow and subject to all types of annoyances. A child who has passed through the troubled pubertal stage is not automatically admitted into the club of those who "know how to think". Formal thought is not a gift presented at a specific age. Formal thought is instead "a building" (Piaget, 1964) and assembling the various components is not an easy task for adolescents.

Piaget (1958) also emphasizes that the emergence, development and refinement of formal thought are spread over several years, leading experts to view this as a two-faceted phase. From age 11 or 12 to age 14 or 15, the adolescent goes through a period of preparation for formal thought during which time new elements appear, are assessed and try to find their place. These operations are considered formal but still lack articulation, precision and stability. Formal thought does not become more systematic, structured and elegant until the age of about 15. At that point, the adolescent truly takes possession of the mental faculties that allow him to exercise much more obvious control over external information and the methods for handling it.

Moreover, while the young adolescent may often be accused of outrageous simplification of social, political or some other reality, the middle adolescent (15 and over) shows a maturity toward these same realities that is obviously similar to an adult's.

It is essential that educators know the limits imposed by the organism on intellectual development. This will help them avoid placing unreasonable demands on young adolescents who are still in the preparatory stage. This knowledge will also preclude offering older adolescents elements that no longer contribute to their intellectual development.

2. The Importance of Repetition for a New Function

Muuss (1982) states that intellectual development must be seen as a process that increases in complexity, mobility and systematization of cognitive schemes and structures. However, this process cannot occur smoothly unless a strict balance between assimilation and accomodation is respected. The organism is in constant interaction with its environment. At some points, the environment is transformed (assimilation) because an existing scheme recognized the operation required. At other times, the organism, when faced with a new situation, must change and adopt a new structure (accomodation). It is important to emphasize that before proceeding with construction and adoption of a new mental structure, the organism requires enough time to become familiar with this new structure. This period of time is necessary, and even essential, for durable and systematic integration. While the adolescent is becoming familiar with a new mental structure, he is not necessarily capable of moving to a higher level. A period of repetition of this new function is necessary for permanent control to be established. In the classroom, a teacher is often in a hurry to press on to the next lesson. There is a danger of excessive intellectual stimulation at the expense of permanent integration. Also, it is not always easy to know how to properly spread out the subject matter so the adolescent will not waste time on unnecessary repetition. Knowing how to fine-tune the level of tension between assimilation and accomodation is an art that requires thorough knowledge of the student, his intellectual speed and his real abilities. On this point, Piaget, as Muuss (1982) reports, opts for the more traditional positions and doesn't hesitate to denounce acceleration that contravenes the laws of individual maturation.

3. Adolescent Formal Thought is Just One of Many Dimensions

Finally, it would harm development and therefore the period of adolescence itself if the attention paid to cognitive development were not accompanied by considerable interest in the person's other dimensions. It should be clearly stated to teachers that intelligence is not the only aspect that stirs during adolescence. Every part of the adolescent's make-up is subject to major change: his body, his emotions, his relationships, his attitudes, etc. His personality is emerging and the articulation of the dimensions of this personality will be the result of a series of operations at all levels. During adolescence, it is impossible to isolate the "intelligence" variable in order to examine, measure and stimulate it in isolation. The results would be disappointing because intelligence is not, and never will be, an independent variable. It is not always easy for teachers to make allowance for this set of dimensions in perpetual motion. But if, as we believe, the teacher is a "development companion", his task is not without prestige. It is part of a project in which the overall growth of a human being is both the major challenge and the greatest reward.

CHAPTER 4 - THE VYGOTSKYAN VIEW OF COGNITIVE DEVELOPMENT

Introduction

For Lev Semenovich Vygotsky, a Russian educational psychologist, the main purpose of education was knowledge, through which emotion is secondarily integrated. His theory concerns the use of language as a tool in the development of the intellect, culminating in its highest form, consciousness.

As a consequence, his methods are basically different from Piaget's. Vygotsky believed that man masters himself by mastering nature, and that man is formed by the instruments he uses in achieving this mastery. It is therefore a mediational theory, since it is through the use of the tools of language and thought that man is able to internalize reality.

It should be evident, even from this brief introduction that Vygotsky's view of education is both a theory of the development of cognition, and also of the nature of man. They are both interconnected, so that language and thought give the power and strategy to cognitive activity whereby reality can be mastered and simplified. The role of education is to develop consciousness, and thus imports the consequent ability to be free of one's history. Bruner (1962), in his introduction to Vygotsky's book, summarizes, saying it is "an image of man that places the effort to learn and master into the centre of the stage as an instrument that frees us of earlier efforts and results".

Vygotsky's theory is more explicit concerning the earlier stages of life. Nevertheless, he sees the adolescent years as being of prime importance. To understand the possible applications of his theory to adolescent education, a brief presentation of his entire theory is necessary. A discussion of the approach to the problem will be followed by the manner in which consciousness is reflected developmentally, especially in the formation of concept. The culmination will be the application of these ideas to education.

1. The Vygotskyan Approach

There have been two extreme approaches to the problem of thought and language. One approach views thought and speech as one and the same thing, speech being the mere outward manifestation of thought. The other extreme holds that both are independent processes, with an artificial connection between the two. For Vygotsky, the only true approach is a unit analysis, studying the relationship of thought and language, thus overcoming the division of a person. To do this, the object of study is the "verbal meaning", a unit which combines into a verbal compound the central aspects of both thought and speech. It is a system designed to unite the affective (speech, at least in its virgin state) and intellectual (thought) properties of man.

The roots of thought and speech are separate, both phylogenetically and ontogenetically, and develop along separate paths. These two lines of development eventually unite, speech becoming rational, and thought becoming verbal, approximately at the time the child discovers each thing has a name. In a very young child, the function of speech is merely vocal social communication, with a very simple global multifunctional message. Thought does exist, but separately. In a sense, speech, per se, is irrational and basically emotional. The cry of a very young baby is an example. The functions of speech become gradually differentiated, until at a certain age, social speech divides into communicative speech (basically the same as the affective communication described above) and egocentric speech, which becomes the instrument of thought.

Egocentric speech appears when the child begins to transform his external behaviour patterns into inner processes. On the surface it seems as if the child is talking out loud to himself, but it is definitely more than this. It is a type of self-directing tool, a means of planning and seeking answers to a solution, and guiding himself to resolve the problem.

This egocentric speech gradually is internalized as its function changes, seemingly becoming more regulative. Egocentric speech, the tool of behaviour regulation, in a sense goes underground, becoming inner speech, the base of both logical and autistic thinking. It is the interior form of behaviour control; inner speech is the seed of thought.

Vygotsky (1962) summarizes this development in the following manner.

> Thought development is determined by language, i.e., by the linguistic tools of thought and by the sociocultural experience of the child ... The child's intellectual growth is contingent on his mastering the social means of thought, that is, language.

It should be noted here that language need not be spoken language. Its role is the same in any form.

There always remains a constant interaction between inner and outer operations, even when thought has been developed. Examples are legion. Students often learn better when able to express themselves verbally; speakers may prepare for a talk by speaking out loud.

Nevertheless, the union of thought and speech is never complete, for they are different in their development and function. There are large areas of non-verbal thought, in which thought is not directly related to speech, and of non-intellectual speech. The fact still remains that much of the development of thought is determined by language.

The concept of the gradual internalization of thought is essential for an application of Vygotsky's theory to education, for it implies certain corollaries, which will be seen to be applicable to any age. Egocentric speech is most noted when the child has to face a problem. This encounter necessitates an "awareness" of the activity, the process being reflected in the self-directive speech. The obvious conclusion is the necessity of arranging relevant problems so that a student will learn to think. Another implication is that the speech structure mastered by a child becomes the building blocks of his thinking.

2. Formation of Concepts

This developmental overview leads to an explanation of Vygotsky's views on concept formation. It is remembered that higher psychic processes are mediated through the sign, the word, which first helps form the concept, and then becomes its symbol. Since language and thought join at a very early age, there is even in preschoolers the functional equivalent of concepts. These functions do not basically change; however, the means, the process by which this occurs, is different, so that true concept formation arrives only with adolescence, with the onset of puberty.

Based on his experimental research, Vygotsky divides the formulation of concepts into three phases, each of which has several subdivisions or stages. The chronological division has much overlap so that true adult concepts can appear early in life in a basic form.

The first phase consists of syncretic images, or unorganized "heaps", into which objects are grouped without any intrinsic basis in reality. The connections instead are unstable and subjective. Examples are random groupings, organization according to the child's visual spatial field, or a combination of these two.

The second phase, labelled "thinking in complexes", is basically a joining by synthesis, wherein actual bonds are used, in addition to subjective impressions, to group. The bonds, however, are concrete, factual, experiential, rather than abstract or logical. There is less egocentrism than in the first phase, but the child is as yet unable to rise above the elements.

There exist five types of complexes: 1) association -- the bond need not be a common trait; 2) collection -- this is an association by contrasts; 3) chain complex -- this purest of complexes has no inherent nucleus, so that any concrete attribute can act as the reason for the next object to be added to the chain; 4) diffuse complex -- this is based on a vague limitless connection, within the bonds of the factual object; 5) pseudo-concept -- this transitory phase resembles true adult concept, since the language is the same, but the process by which the grouping is achieved is still concrete and factual.

The pseudo-concept complex is the link to true conceptual thinking. The adult concept offers the exterior form of the concept through the medium of language into which the pseudo-concept can change and develop into a true concept. "Verbal intercourse with adults thus becomes a powerful factor in the development of the child's concepts." (Vygotsky, 1962)

The third and final phase, abstraction, complements the other root of true concept formation, synthesis. It brings about the separation into elements. The first division of global perception occurs when maximally similar objects are grouped. To do this, it is necessary to pay attention to some traits more than others. The next development presupposes the abstraction of a common single attribute as the basis for grouping. Finally, true concepts are defined as the formulation of a concept on an abstract level, and then applying it to new concrete situations.

Luria (1969) stresses the importance of Phase III.

> Only in the next stage, which is formed under the influence of systematic training, is there substantial change. The word, changing its structure, is given a new, important meaning in the execution of the task. In this stage which, according to Vygotsky, is attained only during adolescence, the word becomes freed from the influence of direct impressions. It abstracts now one, now another attribute and synthesizes them into a complex of attributes. The process of classification acquires a complex character mediated by the word ... Generalizations underlying the word lose their concrete character ... The word becomes the basic instrument of thinking, and thinking acquires a mediated character.

The stress is on adolescence as the important period, wherein one truly learns to think. It is a time of crises and transition, rather than completion. An adolescent may revert to elementary forms of concepts in many areas of thinking; he may not be able to express himself well in the verbal mode, even though he has formed a true concept. Luria also underlines the importance of education (systematic training) in the development of thinking.

It is evident that the adolescent era is a very fruitful time for learning, and learning to think. It is therefore essential to analyse and set up methods so that this situation can be utilized to its full extent. The development of conceptual thinking, being a creative rather than a mechanical process, needs environmental, academic demands so that problems are created which need the formation of new concepts for a solution.

Luria has expanded and expounded on Vygotsky's premises so that the theory is often referred to as the Luria-Vygotsky theory of thought and language. He has related the developmental aspect to more specific age-related stages (Luria, 1959, 1969; Wozniak, 1972;

Meichenbaum, 1973), stressing the change from the regulation of behaviour via the motor aspects of speech to regulation by the semantic content.

This may be better understood by an explanation of two hypotheses. (Miller et al., 1970) Vygotsky had postulated that there was a progression from external to internal control, from the speech of others directing one's behaviour to self-regulation through language. A concept borrowed from Pavlov's two-signal system expounds on this. Speech at first acts like any other first signal system, the physical characteristics of speech controlling behaviour. Later, verbal control shifts to the second signal system, the semantic aspect of speech. Speech becomes self-controlling, a means of orienting to a stimulus.

The second hypothesis is Luria's own. Since the motor aspects of speech develop more quickly than the general motor system, speech through self-direction can be used to help the orderly formation of the motor responses which it accompanies. Thus a child talks to himself to help perform the motor functions at hand. This is one of the earliest instances of the regulative role of speech.

3. The Role of Education in the Development of Thought

Having understood the types and development of concepts, and being aware of the importance of education, the question still remains: What is the specific role of the school in the development of thought?

Vygotsky answers by differentiating two general types of concepts, encompassing the specific classifications: spontaneous (non-scientific) and non-spontaneous (scientific). Spontaneous concepts are formed through self-discovery, creatively out of one's own experiences, thereby imbuing the concept with one's own individuality. It is mastered through personal practical experience, and not as verbal formulations. (Luria, 1969) Scientific concepts, on the other hand, are achieved primarily through instruction and learning. What, then, is the relationship between instruction and the development of scientific concepts?

Vygotsky wanted to counter two common opinions. Scientific concepts are not absorbed prefabricated by understanding and assimilation. A process of development is essential. Secondly, he stressed that non-spontaneous concepts are not similar to spontaneous concepts in their formation. Scientific concepts (Luria, 1969) originate through school training. They are mastered first as verbal formulations being immediately conscious and voluntary. As such, they have no practical content and must return to facts to gain their proper orientation. It is because of this occasional weak base of factual knowledge that scientific concepts can dislodge to form a body of empty verbal formulations.

In education, both types of concepts are needed, even though scientific concepts are more properly the domain of instruction. Direct teaching of concepts is a vain task, resulting in an "empty verbalism", a camouflage of words over a vacuum of true knowledge. The two processes are really parts of a unitary process in the development of concept formulation. Although different in their source, as related above, they are not antagonistic but related, constantly interacting and influencing one another. The knowledge of the level of development of spontaneous concepts is essential to the development of non-spontaneous concepts, precisely in order to forestall words without real meaning, without a reflection in reality. A certain level of mental development is required upon which scientific concepts can be built.

Maturation and learning are both seen to be important, both developing in reverse directions, albeit still connected. Spontaneous concepts are non-conscious, the object of attention being centred on the object itself, as opposed to the act of thought. These spontaneous concepts, based on concrete situations, move upward, reaching a certain level before becoming more refined through scientific concepts. They supply the structures necessary for the concrete application of scientific concepts.

The non-spontaneous concepts are formed through the mediation of the word (adult verbal meanings) which is the basis of flexible thinking, containing all the systems, past and present, simple and concrete to the very complex and abstract. They move from the top down, through the spontaneous concepts, becoming more generalizable as they become more elementary, more concrete, and more applicable to other areas. They impart a system to concepts, which Vygotsky considered essential for consciousness and deliberate control.

The relationship of the two types of concepts is really a question of the relationship of school instruction to the mental development of a child. "Instruction is one of the principal sources of the schoolchild's concepts and is also a powerful force in directing their evolution; it determines the fate of his total mental development". (Vygotsky, 1962) It does this by making the child conscious of the operations of his intellect, focusing on the process, thereby leading to mastery of the process. It is through education that nature is mastered.

The student gains consciousness of being conscious, i.e., of being aware of his mental functions. "School instruction induces the generalizing kind of perception and thus plays a decisive role in making the child conscious of his own mental process ... Reflective consciousness comes to the child through the portals of scientific concepts." (Vygotsky, 1962)

Why should a student not be aware of the more familiar spontaneous concepts, yet be aware of his scientific concepts? "Because the teacher, working with the pupil, has explained, supplied information, questioned, corrected, and made the pupil explain. The child's concepts have been formed in the process of instruction, in collaboration with an adult. The medium of the concept is the word." (Vygotsky, 1962)

Although Vygotsky appears to be emphasizing instruction over self-discovery, he is, rather, stressing the shortcomings of spontaneous concepts. Education wherein the student learns entirely on his own appears to be inherently limited. There must be a top-down corresponding development, an imposition of a system through instruction so that concepts can become subject to consciousness, and therefore more generalizable. This is the real contention -- only through instruction can one rise above facts to conquer them.

Vygotsky stresses self-discovery and feelings, and the resources of the word, the emphasis being on the latter in the formation of concepts. The goal is knowledge, meaning the ability to think in all aspects of life. As such, it includes emotions. It is the ability to regulate one's life through the medium of the word.

Vygotsky must be properly understood. He definitely does not advocate a direct teaching of concepts. As stated previously, this leads to a parrotlike repetition of empty verbalism, with no foundation in reality. Instruction has a much broader connotation here. It means being aware of the upper and lower thresholds of both spontaneous and non-spontaneous concepts, and employing both. Good instruction precedes and refines development. This implies an awareness of the most fruitful time for certain subjects, and for levels of difficulty within topic areas.

All this can best be done by creating the context, the problem, which will induce the student to regulate his own behaviour through his thought. These efforts can then be refined by the teacher's explaining, informing, questioning, and so on.

The importance of Vygotsky's views in adolescent education cannot be underestimated. If true concepts are not formed until adolescence, it is this time that is most dynamic, and most fruitful, for academic advancement.

There are certain practical implications with this theory. One concerns the concept of "formal discipline", usually associated with the name Herbart, and the teaching of Greek and Latin.

Viewing this idea through the eyes of Vygotsky sheds a different light on this now-obsolete proposal. Vygotsky distinguishes two kinds of instruction. One is the narrowly specialized skill-training such as learning to type, which requires practice and habit formation. The other form of instruction is that which activates large areas of consciousness; it is here that the concept of formal discipline may still be of value. It is best understood through discussion of the development of writing skills.

Written speech is "of paramount importance for the mental development of the child" (Vygotsky, 1962), helping the student ascend to a higher level of speech development. Written speech is a "deliberate structuring of the welt of meaning" (Vygotsky, 1962), being more complete yet more abstract and removed from immediate needs than oral speech which is often truncated and condensed.

Written speech "assumes a much slower, repeated mediating process of analysis and synthesis, which makes it possible not only to develop the required thought, but even to revert to its earlier stages, thus transforming the sequential chains of connections into a simultaneous, self-reviewing structure. Written speech thus represents a new and powerful instrument of thought". (Luria, 1969)

The interpretation seems to be that formal discipline does indeed aid the development of thought, as was commonly propagated. Inner, folded, speech can evolve from different types of outer, unfolded speech. The functional and structural features of subjects such as grammar and written speech come later in development, enriching inner speech by delaying and inhibiting the direct appearance of speech connections, increasing the need for a preliminary internal preparation for external speech. It helps in learning how to think. This does not necessarily imply a return to the teaching of Greek and Latin, but it does imply the importance of using different methods to help inner speech reach its fullest development.

Luria notes in his analysis of the interrelationship of thought and language, two more uses of speech. It quickens the learning process, since labelling facilitates discrimination. External speech also, even in adults, helps sensory analysis become more precise and stable.

Experimental results have basically upheld the Vygotsky-Luria hypothesis of language as an important step in cognitive development. The relevance has been shown to be wider than mere cognitive style or intellectual ability; the internalization of language has a self-directing influence on seemingly all stages of development, suggesting that the role of educators is broader than might be imagined. It points rather to the formation of types of programs for controlling all kinds of behaviour. It implies helping the student to program himself to handle life in all its aspects, to change, adapt, modify, accommodate, assimilate. It also suggests, not only the formation of particular programs, but also helping to formulate a master program which will enable the student to formulate his own programs.

More practically, the research pointed to the existence of individual differences in being able to internalize and control one's own behaviour through private speech. This might lead some day to the realization that there may be specific ways to teach different children. Perhaps the different types may be able to handle different types of thought easier, as suggested by Kohlberg et al.

Vygotsky's theory of the development of thought through language leads to the following theoretical perspectives. Language in any modality is important to the development of thought. At first, the speech of others directs a child's behaviour. Later, the relationship is reflected in a child's talking to himself to guide his external behaviour. This private, self-directive speech gradually becomes internalized, becoming inner speech which is the key to thinking. Speech in the form of internalized verbal meaning becomes an internal director of behaviour, so that now the child, by this thinking, regulates himself. Although most people use both inner and outer speech all their lives, the internalization is almost complete by age 10.

The development of concepts, based on the medium of the word, goes through three main phases, the last and most important phase of true conceptualization being reached at adolescence. There are two types of concepts. The first are called spontaneous concepts, since they are achieved spontaneously and creatively out of one's experience, and are rooted in concrete facts. The second are non-spontaneous, or scientific. This is a corresponding top-down development, refining the spontaneous, and using them in order to be applicable to reality. These scientific concepts are immediately generalizable and abstract, being formed through the medium of instruction by language. It follows that the general stress on the necessity of scientific concepts points to the need for instruction and verbal intercourse between teachers and students as a means of developing thought.

Thus, Vygotsky states that the first stage in concept formation is the student's spontaneous interaction with a stimulating environment, while the second, which leads to real and scientific concepts, is the result of instruction. It is interesting to compare Vygotsky's theory of concept formation, which is a theory of learning, with the theory of teaching developed four centuries ago in De Magistro by St. Thomas Aquinas, who stated that "to teach is to cause knowledge in an individual by leading the individual through the same intellectual processes that led the teacher to that same knowledge".

There is ample evidence of the importance of the adolescent years in forming concepts, and the need to know how to go about this. There is a necessity for research in this field. Formal teaching seems to be of little value. More emphasis should be placed on creating tasks that will lead into the child's possibilities; the theory also demands that teachers be aware of the child's level of both spontaneous and scientific conceptualization, so that tasks can be created, and the concepts refined through instruction.

Vygotsky (1962) was well aware that the relationship of thought and language may only be a limited explanation of a complex fact. However, the door he opened should be of essential importance to any educator -- the general problem of consciousness. "Thought and language, which reflect reality in a way different from that of perception, are the key to human consciousness."

CHAPTER 5 - PERCEPTO-COGNITIVE STYLES AND ADOLESCENT COGNITIVE FUNCTIONING

The study of cognitive styles by psychologists and educators is of relatively recent vintage. Of particular note is H.A. Witkin who, with his colleagues, gave impetus to an imposing body of research aimed at exploring measurable individual variations in stylistic dimensions of cognitive development and behaviour. These psychologists (Witkin, Goodenough and Oltman, 1979) contend that a full appreciation of cognitive functioning requires more than the ability to measure intelligence and identify qualitative characteristics of thought. In their judgement, a full understanding of cognition and thought is impossible without also considering individual variations in the style and form used in the interpretation, transformation, and reporting of information. (Kogan, 1971)

There are definite indications that different dimensions of cognitive style are appreciably implicated in particular intellectual outcomes and adaptation to specific educational practices. (Kagan et al., 1964). More recently, under the direction of K.T. Henson, the journal Theory into Practice (1984) devoted an issue to the study of the relationship between styles of learning (or cognitive styles) and styles of teaching. The various articles presented in this issue implied that the field of cognitive styles is still very current and promising for education. In a recent study by Witkin et al. (1979) on the current state of this field, the authors show once again that this is still a very valid approach to the study of cognitive functions.

For example, relationships between various dimensions of cognitive style and important behaviours such as vocational choice (Osipow, 1970) and pathology (Witkin, 1965) have been demonstrated.

In the past, cognitive styles have been presented as dimensions in the manner of information reception, confrontation, solution, and management. Gardner et al. (1959, 1960) factor-analysed several measures of cognitive styles, tests of mental abilities, and other personality indices, concluding that "...intellectual abilities and cognitive controls (styles) are not isolated aspects of cognitive organization, but are mutually interrelated. The arbitrary distinction that has sometimes been maintained between intelligence and the broad scale organization of cognition seems inappropriate". (Gardner et al., 1960)

The study of cognitive styles centres basically on the means of receiving, processing and using information. There is every indication that cognitive style is independent of intelligence and attenuates the qualitative transformation of cognition referred to by Piaget. Theoreticians of cognitive style are quick to point out that two children of equal intelligence, capable of reasoning at high levels of abstraction, will approach and master problems in fairly different ways. One may be impulsive, react quickly to the elements of the problem, and make a decision based on the superficial characteristics he sees; the other will think the problem over and analyse each element by studying all possible solutions before making a decision. In another instance, a child reacts to the general context of the problem raised, and when unable to isolate the characteristics needed for a solution, is overcome by the problem another recognizes the significant characteristics in a hectic and complex context with relative ease and speed.

Constant differences in the style of processing and synthesizing information could suggest to teachers aware of this a wide range of different approaches to organizing a subject. One particular method of presentation suited to children with a given cognitive style might prove less effective for children with another cognitive style.

A full review of the growing number of studies of cognitive style is beyond the scope of this chapter. To give the reader an idea of the existing definitions and empirical elaborations of the dimensions of cognitive style, Table IV presents a liberal adaptation of Messick's (1970) taxonomy of cognitive styles. This classification includes several constants observed in percepto-cognitive processing of information, which might well define the nature and limits of intellectual growth.

This discussion will examine only two of the most significant dimensions of perceptual cognitive style, reflectivity-impulsivity and field dependence-field independence, because of the range of studies they have inspired and their specific implications for educating adolescents and children.

TABLE IV

DIMENSIONS OF INTELLECTUAL STYLE *

COGNITIVE STYLE	DEFINITION
Field Independence	An analytic way of perceiving; ability to differentiate important elements from background by overcoming the imbedding context.
versus	
Field Dependence	A global way of perceiving; inability to differentiate important elements in a problem.
Reflectivity	Analytic pondering of selected hypotheses; slow and deliberate evaluation of hypotheses and information-processing.
versus	
Impulsivity	Speedy reponse to problem; generally, the first answer which occurs to individual, frequently incorrect.
Scanning	Variation in the extensiveness and intensity of attention deployment; related to the vividness of an experience and span of attention.
Category Breadth	Consistency in preference for broadly inclusive or narrowly exclusive ways of categorizing.

TABLE IV (continued)

COGNITIVE STYLE	DEFINITION
Conceptual Styles	Individual variablity in perception of stimuli similarities and differences in terms of how many differentiated concepts; also includes preferences for functional or thematic categorization as opposed to description and stereotype.
Cognitive Complexity	Construing the world, particulary social behaviour in a multidimensional and highly discriminated way.
versus	
Cognitive Simplicity	Construing the environment in a simplistic and stereotyped manner.
Levelling	Meshing of similar though non-identical objects in memory, with corresponding difficulty in recall of similar elements.
versus	
Sharpening	Highly compartmentalized memory; distinctiveness of similar objects stressed with lowered tendency for confusion.

TABLE IV (continued)

COGNITIVE STYLE	DEFINITION
Limited Control	Low susceptibility to distraction and cognitive interference.
versus	
Flexible Control	High susceptibility to distraction and cognitive interference.
Tolerance for Incongruity	Individual variability in willingness to accept unrealistic experiences and perceptions at odds with conventional experience.

*Liberally adapted from Messick (1970)

1. Reflectivity-Impulsivity

Reflectivity-impulsivity, or conceptual tempo, refers to that dimension of cognitive style characterized by the manner in which the quality or validity of one's hypotheses are evaluated. Reflective children are deliberate and analytical in problem-solving activity and in their approach to new and unfamiliar tasks. Impulsive children are quick and impatient, seemingly thoughtless and failing to take sufficient time to consider the available information as well as possible responses to it.

Kagan, studying elementary school children, observed that those identified as reflectives by a Matching Familiar Figures test (MFF) were capable of monitoring attention longer, were more persistent with difficult tasks, made fewer errors when beginning to read, and were less distractable and fidgety in classroom settings. Siegelman (1969) has developed a relatively similar profile for reflective adolescents in attention to visual stimuli. Ward (1968) reported that reflectivity-impulsivity is a general and pervasive feature of intellectual performance, consistent across tests and under different conditions. Impulsive children answer problems faster and are more prone to error than their reflective counterparts. (Kogan et al., 1966) When faced with the visual comparisons tasks on the Matching Familiar Figures test, reflective children spent more time examining alternatives than the standard stimulus. They appeared to compare alternatives and only then consulted the standard for verification or rejection of the alternative. Impulsive children, on the other hand, compared the standard with one alternative at a time, making decisions on the basis of how similar or different the standard was from the alternative. They did not respond to differences in detail, responding quickly and making significantly more errors than reflective children.

Nuessle (1972) compared reflective to impulsive fifth- and ninth-graders in their information-processing proficiency (focusing) on a concept identification task. He found the reflectives better able to eliminate irrelevant hypotheses. In addition, reflective children demonstrated longer latencies following feedback than impulsives, particularly if the feedback was negative. Lee, Kagan, and Rabson (1963) found that reflective and impulsive third-grade boys learned relational and analytic concepts differentially. The time required for learning analytic concepts was shorter for reflective than impulsive boys, while the reverse was true for relational concepts. Unfortunately, to date there have been few studies of the validity of this observation for an adolescent sample.

Kagan and Kogan (1970) contend that conceptual tempo is bound by two major developmental principles. For one, differences in conceptual tempo are detectable as early as two years of age. (Repucci, 1968; Pederson and Wender, 1968) Another clearly evident trend is increasing reflectivity through adolescence and beyond. However, a clear possibility exists that some children are reinforced for impulsive behaviour and do not exhibit the more common growth in reflectivity. (McCandless and Evans, 1973) Typically, a teacher's reinforcement of speed of response rather than accuracy may be the critical variable. (Kagan et al., 1966)

Evidence for increasing reflection with age was gathered by Draguns and Multari (1961) who presented Grades 1, 3, 6, and 7 children with ambiguous pictures and who, by providing additional elements, progressively decreased the ambiguity. Younger children were more likely to guess earlier in the procedure, whereas the older children inhibited guessing until they were reasonably certain of being accurate. It would appear that developmental increase in reflective strategy may well be an outcome of a general disposition to be cautious with age and to be concerned with making errors. Increasing reflectivity with age has been reported by Kagan and Siegel (1963) as well as Westcott (1968) thus confirming the earlier study by Draguns and Multari.

Olver and Hornsby (Bruner et al., 1966) point out that while there is a demonstrable general tendency toward reflectivity in evaluation of problems, the nature of the task moderates this trend. Comparing the use of analytic and functional concepts in response to pictures and words, they found analytic concepts decreased while functional concepts increased with age. In addition, analytic concepts were more likely to be used with pictures than with words. Siegel and Olmstead (1967) found elder children produced more analytic responses for all classes of stimuli - people, objects or animals.

Task mediation of reflective-impulsive expression was observed in the study by Kagan et al. (1964). When the degree of uncertainty in a task increased, impulsive children were more prone to make mistakes. Such tasks as arithmetic are particularly difficult for the impulsive child. Reflectivity may often have drawbacks as well. Messer (1970) found reflective children were more anxious about making errors and displaying incompetence when faced with reasoning problems than impulsive children.

While overall reflectivity does not appear to be affected by sex differences, Kagan, Moss and Siegel (1963) found boys were more likely than girls to be over-represented at both extremes of the reflectivity-impulsivity dimension.

Evaluative judgements of either reflectivity or impulsivity should be withheld, unless qualified by the nature of the task or activity through which the style is expressed. Unfortunately, it is commonly true that adults often are deceived by appearances, preferring to think the impulsive and quick child to be brighter than his reflective peer who takes more time to organize and reflect on his responses. Teachers are particularly prone to such logical rating error, and their judgement of the child's intelligence are based on his style of responding rather than his intellectual ability. (Alexander, 1953) While the analytical reflective style is beneficial in tasks requiring mathematical and clinical dissection, the impulsive child is more likely at an advantage in humanities, social sciences, and art. (Kagan et al., 1964)

The effect of conceptual tempo on intellectual performance has yet to be unequivocally demonstrated. Kagan et al. (1966) have arranged programs for modification of conceptual tempo by tutoring impulsive children to become more analytical in their responding. Though instruction affected the speed of response to problems, it failed to produce any noticeable improvement in their intellectual performance, i.e., change in IQ scores. However, Yande and Kagan (1968) presented evidence that a modelling procedure is of significant value in changing a child's conceptual tempo. Exposure to a more or less reflective teacher and teaching style, along with a pattern of verbal reinforcement for reflective behaviour produced measurable changes in conceptual tempo.

2. Field Dependence-Field Independence

At many different levels and within various content areas, education requires students to make a relevant cognitive response to problems which often represent perceptually complex situations. Herman Witkin and his associates have identified and attempted to explain individual differences in cognitive style whereby relevant features of a situation or problem are distinguished and extracted from irrelevant features. They have labelled this dimension of cognitive style field dependence-field independence, or psychological differentiation. Field-independent or psychologically differentiated individuals are adept at separation of the essential and salient features of stimuli from their general context. At the other end of the differentiation continuum, the field-dependent person reacts to the complex situation as a whole, without analysing it, and responds on the basis of what the situation does to him rather than what he does to it. For example, when given a complex or noisy problem where the key elements to solution are camouflaged by extraneous data, the field-independent is more likely to perceive the elements and does so more readily than the field-dependent. In one sense, the field-independent handles the problem while the problem overcomes the field-dependent.

Witkin et al. (1954, 1962) developed four major procedures for assessing variation in psychological differentiation. These measures offer a clearer illustration of the differences characterizing field-independent and field-dependent persons.

The initial technique is the Body Adjustment Test (BAT) which requires that the subject sit in a movable chair placed in a small, equally mobile room. Both room and chair can be tilted in the same or opposite directions. Once the person has been moved into some position where his seating is some angle removed from the true vertical, he is given control of the instrumentation governing chair movement and attempts to restore his body to a true vertical position. His score on the BAT is obtained by measuring the angle of absolute deviation from the true upright position. The smaller the angle, the greater his field independence or differentiation. Accomplishing this task is interpreted by Witkin as the ability of the individual to divorce his visual sensations from kinesthetic cues to uprightness and respond to the kinesthetic.

In the Rod and Frame Test (RFT), the subject is seated in a completely darkened room facing a luminous rod suspended within a luminous frame. Both stimuli are movable and can be tilted to any angle the experimenter desires. The subject's task is to readjust the rod to an upright position, without regard for the tilt in the frame. As in the BAT, his score is determined by the angle that the rod deviates from a true upright or vertical position, and also represents an ability to differentiate kinesthetic and visual cues.

The third test consists of a series of geometric shapes camouflaged within a complex design and is called the Embedded Figures Test (EFT), deriving in large measure from an instrument developed earlier by Gottschaldt (1926). The subject has to pick out and outline the form of a simple geometric figure which he is shown and that can be found somewhere within the more complex configuration. He is timed in the performance and instructed to work as quickly as possible with the 24 different test problems. His score is simply the sum of the time measures. A significant portion of the visual stimulation he receives, the colours and other shapes within the overall configuration, must be effectively overcome in order to identify the simple geometric shape. His ability to isolate the test form, rather than reacting to the complex as a whole, is reflected in the speed of response. This measure of psychological differentiation is the most economical to use and score.

A fourth, rarely used, method is the Articulation of Body Concept (ABC), which merely requires that the subject draw a person, and after completing that drawing, draw another person of the opposite sex. The drawings are then evaluated according to a comprehensive rating system that takes into account the appropriateness of detail in the sketches, and sophistication in articulating the human form. The field-independent is identified by the clarity of the differentiation in the parts of the human body and the manner in which the parts are juxtaposed.

The common theme underlying performance on these different measures is the manner in which an individual deals with confusion, whether by being able to separate aspects of confusing situations from their context or falling victim to their perceptual press. The results obtained for different subjects and for the same subject in each of these tests are remarkably reliable. Witkin et al. (1954, 1962) reported a consistently high interrelationship between performance on these different measures, indicating that all of the tests give an indication of how successful a person is in perceiving elements independently of the surrounding field or context. The more recent and less restrictive concept of field dependence-field independence recognizes a general development trend in which the individual evolves from a fairly general organization to a more structured organization; individual differences reflected in the degree of differentiation were also found to be constant.

Witkin was criticized for arbitrarily instituting psychological differentiation as a cognitive style rather than a special ability. (Zigler, 1963) One year earlier, he had empirically contested this objection (Witkin et al., 1962) by factor analysis of the WISC (Weschler Intelligence Scale for Children) subscales which correlate with their measures of psychological differentiation. Although the WISC results generally corresponded more or less with the measures of psychological differentiation, the factoral analysis reveals that most of the variance is explained by the results of the three subscales, Picture Completion, Object Assembly, and Block Design. Verbal and other performance subtests were unrelated to psychological differentiation. Performance on the three related subscales may be dictated by cognitive style rather than intelligence, because each requires the individual to be able to detach himself from a complex context to successfully complete the tasks.

Numerous validation studies of these instruments measuring psychological differentiation have demonstrated a host of relationships and predictions of various behavioural and personality traits. Field-independent and field-dependent individuals tend to be different kinds of people.

Field-independents tend to actively deal with and manipulate their environment while field-dependents seem to accept their environment passively, reacting to it in a global and intuitive fashion. (Witkin et al., 1962) Deep-seated personality dispositions, such as the defensive structures used to cope with their environment, reveal equally different mechanisms for field independents and field-dependents. Working on the hypothesis that children with an analytic approach would be more likely to employ intricate and specialized defences such as intellectualization and isolation while field-dependent children tend toward simple, primitive defences such as repression and denial, the Witkin group evaluated a sample of 10-year-old boys by blind analysis of three projective tests. Ratings of their responses on defensive structure when correlated with the perpetual index scores (a composite of performance on the major tests for psychological differentiation) yielded a highly significant r of .61, suggesting that the complexity of defensive structure increased with increasing differentiation.

Crandall and Sinkeldam (1964) reported a relationship between achievement orientation and field independence in their sample of children aged 6 through 12, whereas their prediction of dependence-seeking social behaviours and field dependency did not hold up.

Konstadt and Forman (1965) experimentally examined the effects of field dependence on dependency related behaviours to find that their sample of fourth-graders who were field-dependent performed more poorly under conditions of disapproval relative to approval than the field-independents. The field-independent child seemed to be less externally directed in his activities, while the cognitive and affective behaviours of the field-dependent child were highly contingent on the position or negative social cues emitted by others.

The question of developmental stability in psychological differentiation has been addressed by study of two longitudinal groups. (Witkin, Goodenough and Karp, 1967) One group was tested at ages 8 and 13, while the other was tested at ages 10, 14, 17 and 24. Overall, the test-retest correlations of the measures revealed a high probability that a preadolescent who is either field-independent or field-dependent will maintain his status through young adulthood. The coefficients of stability ranged from .48 through .92. While these measures supported a relative constancy of psychological differentiation over time, the absolute level of psychological differentiation increased through age 17 followed by a slight decline through age 24. Witkin and his associates were particularly struck by the manifest stability in psychological differentiation over the ten-year period studied. They argued that any measured dimension of personality which exhibits such a high degree of stability during as turbulent an era of development as represented by these ten years is comparable to the observed stability of

IQ. Kagan and Kogan (1970) point out that this argument should be qualified by the observation of increasing field independence with age, indicating intra-individual variability in psychological differentiation. Faterson and Witkin (1970), in a separate longitudinal study of the body concept test (ABC) produce supportive results for the stability of psychological differentiation from 10 through 24. Ratings of drawings made by their sample over these two age periods correlated .78. Unlike the Witkin et al. (1967) study, they found improvement in psychological differentiation as measured by ABC to be negligible following age 14.

Maccoby (1966) has summarized studies which review the role of sex differences in psychological differentiation. In the main, boys are more likely than girls to score higher on field-independence. This difference emerges in the middle years of elementary school and is non-existent before that developmental period. Sherman (1967) has argued that this difference can be attributed to different cultural opportunities offered males and females to engage in activities and games emphasizing spatial skills. While this position has some minimal support (Vernon, 1972), the overall consensus of opinion challenges the role played by learning experiences in the development of a global or analytic style.

While the theoretical implications of Witkin's research are multiple, its implications for educators are equally extensive. Witkin seems to have uncovered an area of intellectual functioning which has generally been ignored in favour of verbal and numerical skill. Educational agencies should capitalize on analytic skills rather than restricting their enterprise to the development of verbal and number capacities. Significant evidence exists that culturally disadvantaged and culturally primitive group members do not differ in field independence widely from groups having access to broad-based educational opportunities. (Witkin, Faterson, Goodenough and Birnbaum, 1966) Field-dependents, on the other hand, cannot be dismissed as less socially useful and relevant. Evidence is offered from many sources that field dependence is correlated with greater alertness to social stimuli, exhibited in the field-dependent's superiority in retention of social words (Fitzgibbons, Goldberger and Eagle, 1965), ability to achieve unanimous consensus in less time on problem-solving tasks than field-independent groups (Wallach, Kogan and Burt, 1967) and general expertise at the art of interpersonal accomodation.

In a completely original experiment, Ehri and Muzio (1974) asked college-age students to estimate the relative speed of horses running on a track, in order to measure their analytical faculties. Field-dependents immediately demonstrated their lack of ability for analytical thought while field-independents immediately adopted this thought process. These results provide new evidence that field-dependents are more influenced by the general perceptual context of the problem. They apparently find it much harder to discern the important characteristics from elements unrelated and irrelevant to a given problem.

Some initial attempts were made to examine the extent to which cognitive style could be modified. Almost all focused exclusively on modifying the cognitive style of field-dependents or on the search for methods to increase in them the functioning modes that characterize field-independents. This one-way trend clearly reflects the value Western society places on rational-deductive thought; in education, this attitude results in definition of cognitive ability in terms of analytical reasoning. In one of the most recent studies of variables that lead to modification of cognitive style, Linden (1973) notes that based on measures of CEFT of a sample of third-graders, training in meditation promotes greater field independence. Similarly, a significant decrease in anxiety rates under test situations was noted. Although the measures of perception and motivation are affected, performance in reading does not appear to change. In another report cited by Damusis and Desjarlais (1977), Parente and O'Malley (1975) found that based on performance indices obtained on the OEFT and RFT, introducing students aged 6 to 9 to musical rhythms led to an improvement in psychological differentiation. These two studies show that increased introspection and greater self-awareness are essential characteristics of field-independent functioning. The durability of these experimentally created effects has not been studied.

3. Educational Orientations

Although the literature studied implies that psychological differentiation influences various aspects of cognitive functioning, the "science" of cognitive styles still lacks a uniform set of standard data for significant generalizations in terms of concrete educational orientations. Some notable work (Pizzamiglio and Pizzamoglio, 1974 Long, 1974, cited by Damusis and Desjarlais, 1977) classifies respective incidence of field dependence and field independence in the general population it is to be hoped these studies will serve as the basis for future research. The group inventory for psychological differentiation built and standardized by Gannies and Miller (1973) shows promise in this area.

With the proliferation of work of this type, the next stage is to incorporate these data into a model of effective learning so as to work on improving and developing school programs and other educational approaches. An evaluation of the cognitive styles of students would make a valuable contribution to this model which is still woefully incomplete, since it does not recognize the essential transitional phase in methods of perception and information-processing in learning and educational performance. Recognition of individual differences in style preferences would facilitate prediction of socio-affective and cognitive performance and help explain several performance disparities observed for certain didactic materials.

Based on the most relevant literature on cognitive styles, a few conclusions can be offered:

1. Since a student's performance in a special educational task may depend on his ability to deal with a complex context, the teacher should not interpret differences in performance as indicators of intellectual ability. The teacher should note the normal method of functioning used by the child and the nature of the task, and not jump to conclusions about his abilities.

2. A typically field-independent child will show greater ability in solving spatial and mathematical problems or problems specific tc the physical sciences, and will be less sensitive to social approval, taking outside criticism with greater resistance and less anxiety. He prefers intrinsic independence and motivation and showing greater emotional maturity.

3. Field-dependent children excell in tasks involving social interaction. Their normal conformity to the demands of the situation and sensitivity to outside factors allow them to quickly achieve a consensus when solving problems in groups. Their cognitive style makes them more likely to function effectively in emotional or verbal contexts, i.e., in the humanities, arts and literature. They react quickly and with greater emotional intensity to social approval.

4. The shortcomings of the field-dependent's method of functioning in situations where he must detach himself from his perceptual impressions can be reduced through some methods such as modelling or other training techniques easily applicable to classroom situations.

CHAPTER 6 - QUANTITATIVE ASPECTS OF INTELLIGENCE

Introduction

The three preceding chapters discussed the qualitative aspects of intelligence. Now the quantitative aspects must be studied, i.e., the aspects related to measurement of intelligence through intelligence tests.

Psychometricians' contributions to our understanding of adolescent cognitive growth and functioning was purely a by-product of their concern for test development and validation. They have left an artifactual legacy of normative describers of adolescent thinking capacity and intellectual growth. Because of their methodological-quantitative focus, they cannot or will not grasp the profound qualitative transformations occurring during early adolescence. Static measurement of intellectual capacity obscures the uniquely adolescent emergence of formal operational thought. (Piaget, 1950) It cannot penetrate adolescent cognitive functioning or interpret the growth of abstract formulations or logical thought. It can neither describe nor explain creativity, the ability to distinguish between subjective and objective views, or the broadening of adolescent perceptions of time and space.

Nonetheless, an appreciation of both the quantitative and qualitative approaches is necessary to structure a whole and valid profile of adolescent cognitive functioning. (Elkind, 1968; McCandless, 1970 and 1977) Where the quantitative orientation is decidedly psychometric, directed toward statistical descriptors of adolescent learning capacities and mental organization, the qualitative approach is oriented toward exposing substantive transformations in thought, the dynamics of cognition. Where the quantitative view emphasizes IQ, mental abilities, and other quantifiable and static entities, the qualitative view presents data circumscribing the flux and process characteristics of thought. Where the former controls motivational, perceptual and other variations to purify its measures of ability, the latter attempts to synthesize and stress their contribution to thought processes. Where the quantitative view centres on what Cattell (1941) and Hern (1968) refer to as "crystallized intelligence", which seems to be functionally related to environmental arrangements in the child's learning, or due to formal educational intervention, the qualitative orientation emphasizes "fluid intelligence", cognitive functioning which seems to develop with minimal cultural intervention. Where the psychometrician's importance in our understanding of adolescent cognitive functioning seems to have reached a saturation point, or at best, a plateau, the influence of the cognitive-developmentalist is of increasing importance as evidenced by the growing numbers of students of child development attracted to research in the mold of the Genevan school.

1. Theoretical Bases for Intelligence Tests

A number of basic structural views of intelligence have been formulated over the past half-century principally by psychometricians interested in the creation and development of tests for mental ability. Where some, such as Spearman (1923), consider intelligence a general and unitary capacity, others describe the structure of intelligence as a composite of many different abilities (Thurstone, 1938), while still another group considers intelligence as that which is limited by the number of tests constructed to measure discrete mental skills sampled from the vast pool of specific human abilities. (Guilford, 1966; Thomson, 1952)

Spearman's (1923) theory of intellectual structure is based on a personally developed factor analysis of the then available mental test data. According to his observations, relationships between various measures of mental ability can be accounted for in terms of a "general intelligence" factor which he labels factor G. However, performance on any given task is not entirely a function of G, but involves additional factors. Given, say, a mathematical reasoning task, performance would be determined by the influence of G-S1, while performance on a verbal reasoning task would be determined by the influence of G-S2. Correlation between both tests can be attributed to the common influence of the G factor, while absence of a perfect correlation is accounted for in terms of the independent and unrelated S factors specific to each task.

Reacting to what he considered oversimplification in citing intelligence as a unitary capacity, Thurstone (1938) formulated a multifactor description of intellectual structure based on his factor analytic procedure which identified seven primary mental abilities: number, word fluency, verbal reasoning, memory, reasoning, spatial reasoning, and perceptual speed. He devised tests which ostensibly measured variability in each factor. These tests are known as the Thurstone Primary Mental Abilities Tests (PMA). They demonstrate varying degrees of relationship among each other, unintentionally supporting the operation of a general intelligence factor, yet the presence of somewhat higher correlations among different subsets of these seven tests indicates support for a group factor theory.

Finally, the sampling conception of intelligence is compatible with data presented in support of other views. However, rather than proposing a distinct and limited array of factors accounting for test performance, this position would equate intelligence to all specific abilities reflected in any given test. It maintains that group factors are artificial, fictional constructs of intellectual structure, created as an explanation for the common testing artifact of overlap in particular discrete mental abilities measured by various instruments. A logical conclusion of this approach (evident currently in the work of Guilford) is the unimpeded generation of as many mental abilities as there are tests which overlap in their sampling of specific abilities. These three positions have implications for the interpretation of empirical data gathered to assess the developmental regularities and variations in intellectual capacities. They were necessarily reviewed to provide a sound framework for understanding the quantitative dimensions of adolescent cognitive functioning and development.

2. Methodology of Intelligence Testing

Since the majority of descriptive studies reviewed in the following sections rely on measured intelligence as a principal dependent variable and descriptor of adolescent cognitive capacity, a brief review of methodology in intelligence testing is indicated.

The chief dilemma posed in drawing general conclusions about the course of intellectual development, differentiation of mental ability as well as IQ constancy, is the extraneous impact of differences in measurement dictated by the test-taking abilities of children and adolescents. While tests of mental ability in childhood are individually administered and less likely to demand verbal performance, the adolescent's ability to inhibit distractability, use a pencil, and respond to verbal instructions justifies the use of group intelligence testing as a convenient and economical means of gaining evidence into his relative intellectual status. Quite obviously, the adolescent with reading problems or who does not speak the language of the test well, will do very poorly. In addition, particular personality features may interfere with a valid interpretation of intellectual capacity based on test results. For example, Yamamoto and Davis (1966) tested approximately 500 students in fourth, seventh, tenth, and twelfth grades at a large suburban American midwestern school on the Task Anxiety Scale for Children (Hill and Sarason, 1966) and the Kuhlmann-Anderson Group Test of Intelligence. Overall, the intelligence test scores favoured the low anxious group by 8.0 points, while at the twelfth-grade level the low anxious group outscored the high anxious group by 16.4 points.

Measures of motivation, coupled with intelligence scores, have also led to more efficient prediction of achievement among adolescent groups. (Holtzman and Brown, 1968; Khan, 1969) Factors complicating valid interpretation of intellectual growth curves include between-test variations of test-item content, the use of differential measurement units, test discriminability, as well as the often limited ceiling of different intelligence tests. These difficulties are aggravated by the distinctive construction of tests administered to varying age groups. Before intellectual growth curves can be described using these data, they must be transposed into comparable units, a procedure fraught with no small perils for interpretation. (Bayley, 1955)

3. Rate of Intellectual Growth During Adolescence

Age trends in intellectual growth have consumed a substantial proportion of the mental test movement's energies. While the psychometrician's principal emphasis dictated a concern with intellectual growth rates over the entire developmental span, of necessity findings bearing on developments during late childhood and early adolescence were generated. In general, the evidence supports the almost axiomatic expectation that intelligence increases through childhood and early adolescence, with older children, on the average, more intellectually capable than younger.

Two major methodological approaches peculiar to developmental studies have generated data useful in mapping the course of intellectual growth. While their overall observations are generally similar, idiosyncratic methodological differences yield specific and distinct conclusions regarding the course of mental growth.

The longitudinal approach utilizes periodic sampling and testing of the same group of subjects over a given interval of time. The epitome of this approach is represented by the *California Growth Studies* (Bayley, 1951) which charted intellectual development over the life span. Bayley (1955) maintained continuous contact with subjects from birth through middle-age, noting that intelligence increased through 26 years of age, when it levelled off and remained constant through age 36, the terminal age for the purpose of her study. More specifically relevant to our concern with adolescence, Bayley (1949) points out that intellectual growth during late childhood and early adolescence is negatively accelerated, reflected by relatively smaller increments in intellectual growth with each passing year. McCandless (1967) reviewing the literature charting age-trends in intellectual growth also notes that the pattern of growth following approximately 10½ years of age is characterized by a progressively slower rate. While some investigators report a slight reversal in the rate of negative acceleration during the preadolescent period (Freeman and Flory, 1937; Terman and Merrill, 1937; Wechsler, 1950), and make an attempt to relate it to the occurrence of the physical growth spurt, intellectual growth appears to be continuous and even rather than sporadic and discontinuous.

Cross-sectional cohort studies of intellectual growth are typified by the research of Jones and Conrad (1933), who administered the *Army Alpha Intelligence Test* to 1,191 subjects ranging in age from 10 to 59. Their results revealed a rapid increase in mental growth through age 16, followed by a considerable retrenchment in growth rate. At 21, a downward trend in the rate of growth was established. Shock (1951) in a similar study has generally validated their findings.

Zubek and Solberg (1954) contend that adolescence represents a period of peak efficiency for most mental functioning. Test of intelligence as well as achievement and aptitude tests which require speed, concentration and the maintenance of attention are ideally suited for this age group. Performance on such tests shows a rapid deterioration thereafter. Power tests show least deterioration in performance and do occasionally demonstrate increased proficiency with age, particularly tests of vocabulary and general information.

More recently, Schaie and Strother (1968) have levelled a persuasive argument critical of the substantive observations regarding intellectual growth generated by a cross-sectional cohort method, typified by the Jones and Conrad (1933) study. They suggest that numerous uncontrolled factors, such as generational differences in educational attainment and other socio-historical variations, provide an invalid description of cognitive growth. In support of their argument, Schaie and Strother selected a stratified random sample of 50 subjects from every fifth-year level between the age of 20 and 70. Each subsample was administered the *Test of Behavioral Regularity* separated by a seven-year interval. Analysing the results by way of a cross-sectional approach and projecting curves of intellectual functioning using the seven-year longitudinal data, they note marked discrepancies in the course of mental growth generated by these two approaches. Overall, the curve for individual longitudinal growth remained steady, increased for a longer span of time, and fell less sharply than the curve based on cross-sectional cohort comparisons.

More recent studies cited by Lerner and Spanier (1980) appear to confirm that the course of intellectual growth from adolescence to adulthood is not linked to age alone; the characteristic decline in intelligence after adolescence arises from the methodology used for data analysis.

Lerner and Spanier (1980) stated:

> In light of longitudinal studies, the levels and types of intellectual functioning present in adolescents can be expected to hold steady or even increase as the individual ages.

4. IQ Constancy

To what degree is adolescent IQ stable and unchanging? Do children maintain essentially the same relative status within their age group as they grow older? While related to earlier discussion of intellectual growth rate during adolescence, these questions focus more on individual development variability in intelligence than on normative characterization of adolescent intellectual growth. If empirical data can be mustered which support maintenance of the same relative status in intellectual functioning with increasing age, then IQ can be assumed to be a relatively reliable indicator of mental ability at given age levels and of predictive value for later developmental periods. (Ausubel and Sullivan, 1970)

Usually, studies designed to establish the stability of IQ over time test and retest the same children at different age levels, assessing the strength of relationship between obtained IQ scores on the separate occasions. High correlations are interpreted as evidence of IQ constancy while low correlations indicate instability. Studies which rely on the intercorrelation of scores obtained by way of different test types, say a measure of preschool intelligence and performance on the WAIS yield relatively lower indices of IQ constancy (Bayley, 1955) than a procedure utilizing the same measuring instrument applied to the same group on two separate occasions. Absence of a universally applicable measure of intelligence, validly indexing IQ over broad developmental spans, limits firm conclusions absolutely verifying or contradicting the concept of stable IQ. Pinneau (1961) cites that current evidence supporting IQ constancy is mixed and inconclusive, owing partly to methodological approaches and test differences used at various ages.

At best, the mental measurement truism that the older the child when initially tested, the shorter the time interval between initial and subsequent testing, then the greater the predictive accuracy of the initial test, generally applies to the body of research on IQ stability. (Anderson, 1939; Bayley, 1940; Bradway and Thompson, 1962; Honzik et al., 1948; Meyer, 1960; Lerner and Spanier, 1980)

Figure 6 gives a good indication of the prediction value of a measure of intelligence at a given age in relation to another measure taken later. This confirms to some extent the statement in the preceding paragraph.

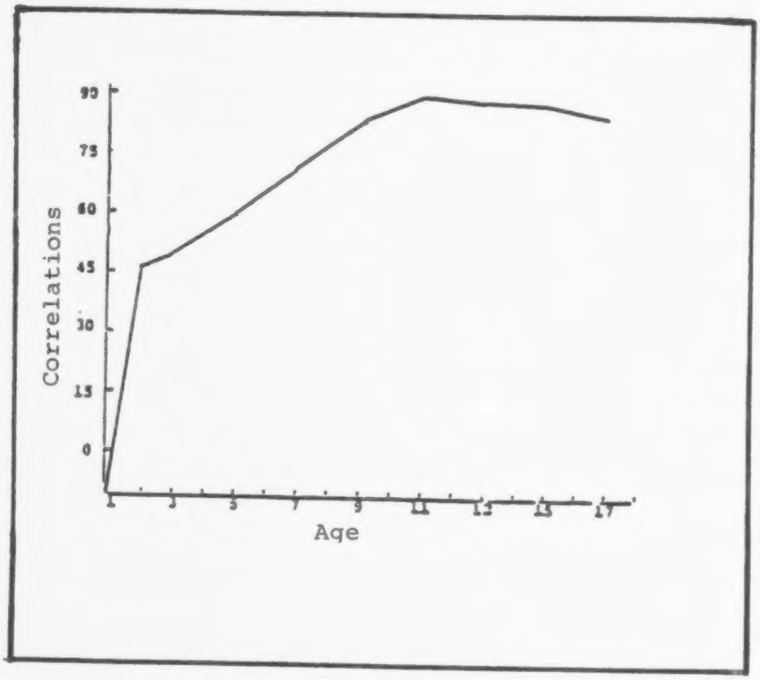

Figure 6 Correlation Between Intelligence Measured Each Year and Intelligence Measured at Age 18 (Lerner and Spanier, 1980).

General observations such as Bayley's (1949, 1968) indicate that intelligence test scores acquire sufficient stability to serve as useful predictors only when children reach school age. Honzik et al. (1948), who tested their sample as preschoolers, in elementary grades, and as adolescents, found support for increasing stabilization of intelligence with increasing age. While individual fluctuations in IQ were quite common, children retained essentially the same relative status within their age group.

Testing lower middle-class children at the eighth- and eleventh-grade levels over a three and a half year interval, Mayer (1960) found overall Primary Mental Ability Tests (PMA) correlated .82 over the two occasions, with word fluency demonstrating least stability.

Bradway and Thompson (1962) correlated scores on the Binet and WAIS for their sample of adults with their preschool and adolescent intelligence scores. While preschool intelligence scores correlated .59 with the Binet and .64 with the WAIS, measures of adolescent intelligence correlated .83 with both tests. Seemingly, adolescent IQ serves as a relatively sound predictor of adult intelligence, but it should be added, a significant amount of variability at later age is left unaccounted for. In the case of Bradway and Thompson's study, 35 per cent of adult intellectual status cannot be predicted using adolescent intelligence scores.

Using test scores obtained on the WISC (Wechsler Intelligence Scale for Children) for 173 normal five- through thirteen-year-olds on three occasions separated by yearly intervals, Klonoff (1972) discovered only one statistically significant difference in eighteen between-year comparisons of mean full IQ. Of the nine possible between-two-year comparisons, only two differences emerged as significant. Strength of the correlations increased with advancing age, with greater instability demonstrated by the younger sample than the older. Comparing low IQ subjects to their high IQ counterparts failed to yield any consistent trends in IQ change patterns. Analysis of the relationship between magnitudes of correlations and the interval between test periods demonstrated a perfect inverse relationship.

Whereas overall IQ indices demonstrate increasing consistency with advancing age, tests designed to tap component mental abilities, e.g., Thurstone's PMA, reflect little stability through the fourth grade. Bennett and Doppelt (1951) and Meyer (1960) offer evidence that such component factor tests of intelligence only acquire sufficient stability to forecast adult aptitudes during the eighth grade for boys, with lower stability indicated for girls. (Meyer and Bendig, 1961)

If one thinks in terms of broad categories of measured intelligence such as low, moderate and high IQ, Elkind (1968) notes that stability of IQ has been largely demonstrated. However, use of absolute scores reduces predictability of IQ with advancing years, for changes do take place, particularly among those who score within the middle ranges of standard IQ tests.

5. Differentiation of Mental Abilities During Adolescence

A question fundamental to and anticipated by our earlier presentation of structural theories of intelligence is whether intellectual structure changes with age. In effect, the question addresses itself to differential evolvement of special mental abilities, and at one level can be translated into the charge that intellectual structure is transformed from a Spearman-like model of intelligence characterizing younger children to a Thurstone-like model characteristic of older children and adults. In sum, the differentiation hypothesis states that mental abilities proliferate and become specialized with age.

In his studies of nine-, twelve-, and fifteen-year-old children, Garrett (1946) administered an array of tests designed to measure retention, verbal and numerical reasoning ability. He discovered significant drops in the importance of the general intelligence factor between the extreme age groups. Where for the nine-year-old boys the G factor was involved .31 in accounting for performance variability over the three tests, it dropped to .13 for the fifteen-year-olds. For girls, the respective drop from age nine to fifteen was .31 to .19.

Numerous studies by the creator of the PMA have also demonstrated progressive differentiation of mental abilities with increasing age (Thurstone, 1938; Thurstone and Thurstone, 1946). For example, Thurstone and Thurstone (1941) identified six primary mental abilities among kindergarten children, seven among seventh-grade children, and nine such factors among college students. Others (Heinonen, 1963; Ljung, 1965; Werdelin, 1966; Baltes and Schaie, 1974) using factor-analytic methods report demonstrable differentiation of intellectual abilities.

During preadolescence and adolescence, vocabulary, general reasoning, and arithmetical ability reach asymptotic levels of development (Conrad et al., 1944; Garrett et al., 1935), with vocabulary growth and ability to understand sentence structure growing at a more rapid rate than general reasoning ability. (Conrad, 1944)

In general, the differentiation hypothesis appears to hold up rather well to empirical testing. However, it has been somewhat discredited by observations of increasing integration of intellectual functioning with advancing age. (Cohen, 1959; Cropley, 1964; Ljung, 1965) Cohen tested children aged seven, ten, and thirteen with the WISC and compared their performance to six-year-olds. Comparisons did not yield any significant changes with age supporting the differentiation hypothesis. Both children and adults exhibit the same factors in intellectual functioning, with adults demonstrating more of the general intelligence factor than children. Cropley's (1964) research with ten- and twelve-year-olds using the WISC found equivalent factor structures with an increasing tendency toward integration with advancing years. Ljung (1965) suggests that integration increases not only between the various component abilities defining intelligence, but also occurs within the various abilities.

Attempts to resolve the differentiation-integration controversy in cognitive development are represented in the work of Green and Berkowitz (1964) and Burt (1954), who recommend a more careful analysis of the possibility that cognitive development follows a pattern of generality in early childhood and during elementary school years, acquiring greater specificity during the preadolescent and adolescent years, followed by a period of consolidation and integration of specific abilities during late adolescence and young adulthood.

At present, with regard to the differentiation hypothesis, the overall evidence appears to support a position of increasing differentiation of cognitive abilities from early infancy through early adolescence. The increase seems to be due less to education and to be more clearly maturational in nature, a contention which would be in keeping with the Piagetian view of cognitive development. (Inhelder and Piaget, 1958) This specific point in the differentiation hypothesis continues to receive great attention. Unfortunately, the discussion is focusing much more on philosophical intuitions than experimentation. Studies by Sternberg (1981 (a), 1981 (b), 1984) and Gardner (1983) are examples.

6. Sex Differences in Intelligence

This section will selectively examine studies of sex differences in intelligence.

Studies of sex differences in overall adolescent intelligence reveal little in the way of advantage for either males or females. (Terman and Tyler, 1954) This comes as no surprise since construction of tests indexing general intelligence includes a deliberate strategy to eliminate content that might favour either sex. Consequently, the absence of sex differences in test results probably indicates successful implementation of this strategy.

However, analysis of component mental abilities reveals the emergence of sex-related patterns in performance. While boys are more likely to obtain higher scores in quantitative and spatial tasks, girls excel on tasks that contain a strong verbal component (Havighurst and Breese, 1967). Bayley (1968), whose California Growth Studies has been reviewed earlier, found that 16-year-old girls exhibited clear superiority on WAIS subscales and scored highly on verbal factors, while boys scored higher on spatial and arithmetic tasks.

Differences in particular "primary mental abilities" led Henzik (1963) to hypothesize differential growth rates in intelligence between sexes. Bruner and Olver (1963) noted that girls have better categorization skills than boys up to sixth grade. In a study of gifted children, boys were more likely than girls to retain high intellectual standing. (Terman and Oden, 1949) Similarly, males are more often IQ gainers than females from adolescence to adulthood. (Bradway and Thompson, 1962)

Elkind (1961) found prominent sex differences in the development of quantity concepts when examining his sample of high school and college-age subjects, whereas these differences did not appear in a sample of elementary school children. Consistent with Elkind's observation, Terman and Tyler (1954) reviewing the literature on sex differences to that time, found adolescent boys to be more facile in scientific and mathematical achievement tasks, while girls were more adept at verbal tasks.

Emergent sex differences in component mental abilities during adolescence reflect the impact of socio-cultural sex-typing of interests rather than true differences in mental capacity. The nature of the affectional relationship between parents and child appears to be a key moderating variable in children's IQ. Henzik (1967) reports strong correlations between parents' and child's IQ when parental ability is high, where prominent displays of maternal concern were evident, and when both parents were concerned with their child's achievement. Other studies have found that male IQ was positively correlated with early maternal affection. (Bing, 1963; Bayley and Schaefer, 1965; Bayley, 1965)

In a thorough study of data from five major studies of child development, Ross and Palmer (1970) assessed factors responsible for intellectual change, whether to raise, maintain or lower IQ. Intelligence test score results were available on the research subjects when they were 6, 12 and 17 years old. Subjects were born between 1921 and 1951. Gains were most evident in the case of girls with brothers, boys with much older brothers or sisters, and first-born children. While boys from broken homes gained less than boys from intact homes, girls were unaffected by this factor. Through age 12 social status and IQ gain exhibited a strong positive correlation, the greater the gain the higher the status. This ceases to be a factor, however, between 12 and 17 years of age. The relationships between IQ growth and the other factors are more consistent, sharper, and stronger in magnitude for boys than for girls. It would appear from this study that intellectual competence is more highly valued for boys and men than for girls and women. In a fairly detailed survey of literature on sex differences in cognitive development, Maccoby and Jacklin (1974) found only a few generalizations on the actual existence of differences and their direction. These studies primarily reveal trends and not, as is very often claimed, absolute conclusions. Lerner and Spanier (1980) summed up the situation well:

> Studies of sex differences attempt primarily to reveal processes that vary constantly with sex; consequently, they are not very successful. It is possible that in addition to the differing methodologies and inherent problems in such studies, the frequently contradictory results obtained are attributable to the fact there is no control of the specific social context in which the boys and girls are developing. There is a real need for studies that question the influence of social context on IQ.

7. Educational Implications

The psychometricians have provided an invaluable view of adolescent growth and intellectual capacity. Their data reflect interest in the methodology of mental testing, with substantive intellectual functioning in adolescence a by-product of their mental measurement emphasis. Nevertheless, the description of adolescent cognitive growth in "crystallized" intelligence is clear. While dramatic physiological changes take place during the early adolescent years, intellectual capacity seems to be little disturbed. Research using IQ tests and mental age indicators finds adolescence a period of negative acceleration in intellectual growth. Consolidation of mental ability and a parallel increase in specific mental capacities is noted. Intra-individual variation in intelligence over time, the question of IQ stability, cannot be answered without some equivocation. While relative intellectual status appears to change little over time, there are prominent variations in measured intelligence which preclude a firm statement in support of IQ stabilization with age. Distinctive motivational and social factors appear to weigh heavily in IQ variability. Until less fragile indicators are constructed, which span longer periods of development, this question will remain unresolved.

The quantitative description of adolescent cognitive functioning and development can be viewed as a jagged perimeter to a partially charted geographic area. While it contributes to a broad normative description of intellectual capacities relative to age-mates, it is a map that fails to record the dynamics and flux of the continent's interior. To come closer to the foliage and rivers of this region, we must consult another perspective.

Both the quantitative and qualitative orientations of the study of adolescent cognitive functioning provide valuable knowledge about adolescent intellectual behaviour.

Psychometrics reveals that adult intelligence, as measured by commonly used mental tests, reaches more than 50 per cent of ultimate capacity by age 10.5 or 11. This age approximates the initiation of early adolescence. Acceleration in growth slows to allow for consolidation of intellectual capacity and development of special mental abilities. Late adolescence and the years beyond bring on adult economic and social concerns accompanied by a slowing in intellectual development, especially for those lacking interest in or the means to pursue higher education.

Overall intelligence is subordinated to development of special mental abilities. Differentiation of cognitive abilities makes its first measurable appearance in early adolescence. Abilities multiply and diversify, perhaps under the influence of the adolescent's special interests or attitudes, which expand and intensify with age and experience.

Differentiation of mental abilities accompanied by consolidation and integration of intelligence are fairly well-established principles of intellectual development. The same applies, although with some reservations, to IQ constancy with age. Although the constancy hypothesis is commonly accepted, several authors have shown empirically that IQ can vary considerably with age. This general constancy of IQ has probably resulted in more harm than good in education circles. The infallibility attributed to statements of IQ constancy results in serious over- or under-estimation of a student's cognitive development. Not only is student selection for special education classes on the basis of IQ test results less than democratic, it also lacks demonstrated scientific support.

Unique patterns of cognitive development in individuals are the rule rather than the exception. Composite indices show a steadily decreasing acceleration in development curves, but individual mental growth rate characteristics dominate the development curve. Some children show sudden acceleration, while others slow dramatically. In yet other individuals, the curve consists of periodic spurts followed by plateaux during which there appears to be no growth.

Individual trends appear not only in general intelligence but also in specific mental abilities which define general intelligence.

Children and adolescents assigned to grade levels by age show varying degrees of achievement in the school milieu. Using the results of a national survey conducted in the United States and known as Project Talent, Flanagan (1965) found that 25 to 30 per cent of ninth-grade students surpassed the average twelfth-grader in achievement on most common school subjects. Within a given age-graded classroom, the twelfth grade, the top five per cent of the students learned twice as many foreign language words in a given time period than the average twelfth-grader. Differences between the extreme groups in comprehension of literary passages identified an enormous gulf favouring the top five per cent of the twelfth-grade group who were capable of recalling eight out of ten items of information while the lowest five per cent could only average two.

These observations dictate that any uniform or quasi-traditional approach to teaching which does not accommodate differences in individual ability probably fails to encourage the most intelligent and capable students as well as the less capable child, possibly restricting the educational progress of both groups. Education must take into account the wide range in cognitive abilities. Varying rates of cognitive development and variations in cognitive ability require that adolescents be presented a broad range of educational resources giving them some leeway to work at their own speed while still challenging them to improve and attain higher levels of functioning.

Quantitative studies of adolescent mental development have an impact on the development and improvement of school programs. A few generalizations emerge from this conclusion. One can only hope they will be verified through serious research before adoption as the basis for school programs.

1. Experience bears out the general belief that adolescent learning capacity increases with age.

2. Some recent research casts doubt on the frequent categorical contention that intellectual development begins to slow in early adolescence. Results of such studies depend on the methodology used. This field requires attention from researchers.

3. Mental growth during early adolescence demonstrates measurable differentiation in ability that can be isolated with general intelligence tests. These measures are less effective, however, in predicting performance in specific content areas than are tests of primary mental abilities.

4. Mental growth rates in adolescents vary widely: some exhibit tremendous surges, others appear stable, and still others show a decrement. Combinations of these various trends may also occur in the same individual.

5. Studies generally reveal that major sex-related differences in the ability to understand various types of problems emerge in early adolescence. These studies have encouraged the popular belief that boys are more adept at spatial and mathematical tasks while girls are more skilled at verbal tasks. Serious doubts have been raised about this assumption by recent research using methodology more sensitive to the complexity of variables influencing IQ. Awareness is growing that IQ is influenced to a much greater extent by the nature of an adolescent's interaction in a given social context and at a given time.

Conclusion

Early adolescence initiates the stage of formal operational thought. The formal-operations child acquires the capacity to think in abstract terms, like a scientist. More adult-like forms of information processing and problem-solving gradually make their appearance during this stage. Personal hypotheses become responsive to the evaluation of data. When the formal-operations thinker is faced with a conflict between sense data and his own convictions, he is flexibly prepared to allow the data to modify his personal hypotheses rather than holding to them tenaciously and dogmatically. Appreciation of combinatorial logic and realizing the exhaustiveness of all possible combinations of elements allow the early adolescent to systematically and progressively follow through problems to their logical conclusions. Pure chance or trial and error approaches to problem solving diminish in frequency and strength.

Use of chronological and historical concepts demonstrates an awareness of past and future time perspective. This development reaches fruition quite late in adolescence, at approximately 16 years of age, signalling the adolescent's readiness to understand and handle biblical, mythological, historical, and future references in greater depth and clarity. Concepts of quantity (volume, mass, and weight) become more meaningful as well, allowing the adolescent to grasp basic physical laws which utilize these concepts. However, these concepts are not all fully developed at the same time, as was noted by Elkind (1961). Overall, there is a demonstrable difference in the formal-operations child's ability to be flexible, inventive and controlled in his thinking.

The appearance of these qualitative changes in thought is not spontaneous nor are they innate. On the contrary, it is characterized by gradual and individual rates of development. While the development occurs at approximately the same age for most adolescents, individual difference variables appear to exert some impact on the transition from concrete formations to formal operations. In addition, the area of cognitive content seems to dictate the transition from concrete to formal operational thought, with certain propensities being acquired later rather than earlier in the process.

According to Piaget, direct environmental intervention has little impact on accelerating transformations in the qualitative dimensions of thought, and may in fact be deleterious if so applied in teaching. This does not mean that environmental arrangements do not affect development of cognitive structures, but that the effect is in part a natural biological progression partially contingent on incidental, culturally mediated learning experiences. Structuring of the environment and thereby treating the child as a passive element in the learning process to accelerate cognitive transformations is misdirected and ordinarily ineffective. (Flavell, 1963; Phillips, 1969) Only rarely does Piaget consider the educational implications of his studies, preferring to chart and empirically develop what is fundamentally a philosophy of cognitive growth. Educational pragmatism and applied psychology are viewed as "American questions".

Nevertheless, a limited number of broad generalizations which have some use in educational practice can be gleaned from the Piagetian position on development. The general axiom, stated at the outset of this section, bears repeating. If the child is developmentally capable of certain operations, then educational methods should be modified to accommodate his cognitive capabilities. Just as one cannot expect a child who has not mastered standing to walk, so one cannot expect an early adolescent who is incapable of abstraction to capture the metaphorical meaning of Alice in Wonderland. Equally, an adolescent caught up in the present time perspective could not be expected to appreciate the historical growth of nations.

Another generalization which is notably one of Piaget's rare references to classroom teaching, suggests that each concept or set of concepts which is acquired has to undergo the processes of accommodation and assimilation in stage-wise sequences from the sensori-motor through the formal operational level of thought. Fundamentally, the teacher would be urged to recapitulate the developmental sequence necessary for the acquisition of a concept by introducing the child to its sensori-motor properties, then having him perform the necessary operations with the materials, reflecting on the materials and cognitively anticipating other operations which can be performed, and so on, until the child internalizes the operations and can reproduce them without depending on the environment. (Flavell, 1963) Unfortunately, this procedure is highly inefficient from the standpoint of educational practicality, since it ordains that each concept be taught using a sensori-motor through formal operational form of instruction. For example, teaching a basic mechanical principle would involve sensori-motor experiences with application of this principle through pre-operational and concretely-operational mastery, terminating in some appreciation of the principle at a formal level. Concepts which may not have concrete identifiable referents such as time, democracy, and so on, would be particularly difficult to teach using this method.

The initial attempts to apply Piagetian theory have been promising and work should continue in this vein. The voluminous body of data generated by the Geneva School should be exploited fully by the applied psychologist and educator since its long-range consequences for society and the modern world are enormous.

In concluding this second section on adolescent cognitive development, we present a few practical considerations that emerge from the studies surveyed.

1. During early adolescence, management of abstract and hypothetical concepts emerges, thereby facilitating the teaching of general principles. Less emphasis is indicated on concrete instances of a principle than for a younger age group. This does not mean that pure abstractions will suffice, but rather that such explanations of phenomena need less concrete buttressing.

2. Since the adolescent becomes more adept at problem solving given the needed information and materials, the teacher can effectively maintain a low profile in the

classroom, being less directive and obtrusive in the adolescent's activity and assuming the role of another resource for the student's problem solving.

3. Given the broad outline of a problem, with all of the essential elements present for its solution, the formal-operations child or adolescent is capable of working within the problem's constraints, centring his problem-solving activity on the relevant elements and is less distractable from the pursuit of his goal.

4. A principle acquired with one set of materials is readily generalized to another set of materials provided they are fundamentally similar. For example, a basic law of mechanics which is acquired in one situation will be applied to the movement of particles in another situation.

5. Personal hypotheses challenged by empirical data are evaluated and considered by the formal-operations child or adolescent. If the personal hypothesis is found not to help, it is flexibly revised in the light of this evidence.

6. Metaphorical content of literary materials is slow to be appreciated by the early adolescent. With increasing age, the adolescent is capable of going beyond the literal meaning.

7. Historical, mythical, biblical, and autobiographical materials are difficult to understand for the early adolescent with appropriate appreciation of such contents developing at approximately 15 years of age. These difficulties are primarily the result of the relatively late developing understanding of the concept of time.

8. Conceptions of law and political systems are equally nebulous during early adolescence, becoming more refined and differentiated at approximately 15 to 16 years of age. Prior to that time, authoritarian solutions to societal problems are expressed with patent inability to appreciate democratic views and civil rights.

9. While concepts of quantity are generally well-developed during adolescence, volume concepts appear to be particularly difficult to grasp prior to age 18.

10. Emergence of formal operational thinking exhibits a fair amount of individual variability as well as differential development dependent on the content area.

IV. EMOTIONAL AND SOCIAL DEVELOPMENT DURING ADOLESCENCE

Introduction

The central event of adolescence is the development of the reproductive capacity, an event which has an all-pervading effect upon the individual and his social environment. Vast changes, some sexual, others non-sexual, are anticipated in this period. In addition to major biological changes, there are concomitantly important developments in the psychological and social areas.

Part IV will review the empirical base in literature for the emotional and social development of normal adolescents.

The discussion will focus on studies of the majority, while not neglecting unusual behaviour that occurs within the normal register and inevitably reflects individual and cultural differences. This discussion will generally exclude profound deviations, serious offences and pathological behaviour.

For too long, attention has been focused primarily on the behaviour of those found in clinical settings, from which generalizations have emerged on the behaviour of the vast majority of normal adolescents. Too often, then, the unusual, the bizarre and the atypical have served as the model from which to extrapolate norms. Fortunately such practices are being seriously questioned today as legitimate sources for modal patterns for the majority of adolescents. As more stress is placed on scientific and systematic empirical study of normal adolescents, the image of adolescence changes from one of *sturm und drang* to modal patterns. Research reveals an image of adolescence that is much more tranquil and stable for that majority than the picture conjured up from theories based on clinical experience and current social comment.

Discovering the normal can be beset with a number of difficulties. Normality may be described in some instances as help, in others as utopia, in still others as average or as process. As the term is used in this study, we are trying to identify that behaviour which is characteristic of the most numerous group within the given population, maintaining at the same time some provision for exceptionality within a normal range. The term normative expectations will be used herein to describe two characteristics:

1. A modal behaviour for the most numerous group, and
2. Behavioural variations for minor substructures within the population, that is, possible variations in terms of sex, age and socio-economic conditions.

The modal behaviour is what we can expect or what has been found to be the typical behaviour for the average adolescent.

Normalcy is not reserved to this behaviour alone, however. Variations in cultural and maturational conditions may dictate a variance which can be taken as quite normal for a subgroup. Thus, each modal behaviour is only complete when tolerances have been indicated for differences.

Middle-class culture has been taken as the point of origin for the identification of modal behaviours for these reasons:

1. It is far more widespread in Canada and the United States and has a more profound effect on a greater number of people than any other subculture;

2. There is much more reliable information available on this group and major landmark studies have concentrated on this area;

3. Subcultural mores overlap the mores of the central culture, thus placing that major culture in a central position.

Modal behaviours will be presented in the following order:

I. Emotional Development: This section will review the literature from a set of modal behaviours and accompanying variations for each of these aspects of the major topic:

1. Emotional maturity;

2. Heightened emotionality;

3. The three basic emotional states: aggressive, inhibitory (fear, anxiety and worry), joyous or happy states of affectivity;

4. Self-concept.

II. Social Development: This section will review the literature for a set of modal behaviours and accompanying variations for the major agencies for socialization of adolescents:

1. Family;
2. Peers;
3. School.

Within each topic, normal expectations will be organized to facilitate a variety of study needs and may be read with varying degrees of detail by consulting the authors mentioned. The format for each normal expectation is as follows:

Modal Behaviour

Description of the modal behaviour, with a list of all relevant studies.

Variances

Discussion of major variances of age, sex, socio-economic conditions and other factors deemed relevant.

CHAPTER 7 - EMOTIONAL DEVELOPMENT

This chapter will present studies on emotional maturity, heightened emotionality (sometimes known as emotional fragility), the three basic emotional states (aggressive, inhibitory and joyous), and self-concept.

1. Emotional Maturity

Modal behaviour 1

> Emotional maturity is expected to increase with age, but its pace is conditioned by a number of factors inherent in the individual himself and the cultural milieu. (Miller, 1974; Hurlock, 1973; Heding and Myers, 1970; Jones, 1965 Crow and Crow, 1965 Dunbar, 1958)

Variances

i) Age

Heding and Myers (1970) found significant increases in measured emotional maturity between eighth and ninth graders (13 and 14 years). Conversely, little difference was found in emotional maturity between ninth and tenth graders.

ii) Sex

Society generally shows more acceptance of overt expression of emotions in boys than in girls. (Garai, 1970) Emotional dependence involving need for affection and support is in general more socially acceptable in girls than in boys. (McCandless, 1970, 1979) There were no sex differences found in emotional maturity of eighth-, ninth-, and tenth-grade adolescents in the Heding and Myers (1970) study, notwithstanding the fact that they did identify significant differences in physical and social maturity by sex. Female students in those grades tended to be more physically and socially mature than their male contemporaries, but undifferentiated in emotional maturity. In contrast, a composite drawn by Cole and Hall (1970) of two earlier studies, one by Pressey and Pressey (1933) and the other by Stone and Barker (1939) indicate that girls show a greater maturity than boys consistent with other measures of growth. The curve of maturity for girls rises sharply between the ages of 13 and 15. On the other hand, boys increase in maturity at a more even and gradual rate.

iii) Socio-Economic Conditions

Social custom in the lower socio-economic class inclines towards more tolerance of overt aggressive acts by boys. (Hurlock, 1973)

iv) Other Important Factors and Conditions

Emotional maturity appears to be dependent to a degree on intellectual development. A close relationship between intellectual and emotional maturity is strongly implied by Heding and Myers (1970). They found that both emotional and intellectual maturity increased significantly between 13 and 14 but changed little between 14 and 15. Much of the responsibility for emotional immaturity in adolescence is ascribed by Willikens (1967) to adults who impose excessive expectations for emotional control early in adolescence. Under these unreasonable demands and pressures, the adolescent's attempts to control overt expression of emotion can, and often do, build up inner tensions, resulting in dire consequences later in life.

Modal Behaviour 2

> As he matures the adolescent is increasingly aware that emotional maturity is more than the simple control of one's overt display of emotion. To be emotionally mature one develops appropriate internal and external control to the end that social approval is gained without serious physical or psychological impairment of oneself. (Hurlock, 1980; Offer, 1973; Jourard, 1958)

i) Other Important Factors and Conditions

The most noteworthy signs of emotional maturity reported in the literature on adolescence are the following. Willikens (1967) perceives maturity in the shift at middle adolescence from ego-centred worry to worry about social relationships with greater personal effort being shown in the control of one's emotions for a social reason.

According to Crow and Crow (1965), emotional maturity is apparent in the adolescent's recognition of the social value of fear. When the adolescent begins to appreciate that intelligent fear can be a safeguard and a desirable restraining influence that promotes personal welfare rather than detracts from it, he is well along toward full maturity.

Another important characteristic of emotional maturity is shown when the adolescent becomes aware that the suppression of an emotion does not eliminate it. The dammed up emotional energy manifests itself in a number of disquieting ways: 1) moodiness, 2) displacement of the emotional reaction from the initiating stimulus to another person or object not involved in arousing the emotion, 3) daydreaming, 4) sullenness, 5) extreme sensitivity to others. (Hurlock, 1973; Josselyn, 1971) Sublimation represents a more acceptable indirect expression of a controlled emotion. (Hurlock, 1980)

Ego strength has a direct bearing on the wholesomeness of control. Autonomy, security and contact with reality mediate favourably for mature emotional control. (Jourard, 1958)

Emotional maturity may be identified in early adolescence when the youngster successfully establishes a "bipolar" relationship with the parents. He gains sufficient independence from the home to permit the development of important extra-familial relations with peers while at the same time maintaining a security base in the home for relaxed tension reduction where he may integrate experiences of the world external to the home. (Koken-Raz, 1971) Total independence from others is not essential to emotional maturity. Rather, there is a wholesome acceptance of mature interdependency as one realizes that others need him as he needs them. (Josselyn, 1971)

One index of emotional maturity suggested by Sweeney and Dickenson (1953) is the ability of an adolescent to realistically appraise people and objects. Inherent in his appraisals are his own personal interrelationships. As he matures, the adolescent will exhibit certain characteristic ways of regarding himself and others. He will:

1) be realistic about his own capabilities;

2) view himself objectively and with a sense of humour;

3) be at ease with others and enjoy their company;

4) not be unduly lonely when by himself;

5) accept criticism objectively and without resentment. (Sweeney and Dickenson, 1953)

Hurlock (1980) identifies four attributes of the emotionally mature individual. Emotional maturity is evidenced when the individual:

1) is able to control emotions which are socially disapproved;

2) relieves dammed up emotions in a socially acceptable way;

3) learns a balance of control to satisfy his own needs while conforming socially; and

4) becomes adept at assessing the appropriate emotional reaction to a situation before reacting to it.

2. Heightened Emotionality

Modal Behaviour 3

> Adolescents who deviate markedly from the norm in the timing and rate of sexual maturing are those most likely to experience heightened emotionality. (Hurlock, 1980; Nemy, 1970; Jersild, 1978; Dunbar, 1958)

Variances

i) Sex

Evidence from growth studies suggests that early maturing may have different effects on boys and girls. (Jersild, 1963; Jones, 1949) For boys it can serve as an advantage in reducing the number of frustrations in expression of masculinity. (Mussen and Jones, 1957; Schonfeld, 1950; Jones, 1949) For some slow-maturing boys, feelings of inadequacy may persist into later life even after the physical differences which stimulated the negative feeling about self no longer exist. (Schonfeld, 1950)

Woronoff (1962) found that fast-growing girls appeared to have greater self-confidence and better emotional adjustment than slow-growing girls.

Modal Behaviour 4

> Causes of heightened emotionality in adolescence are multiple and will include, in addition to the rapid and marked physical changes accompanying the development of sexual maturity, such other factors as social change, physical health and nutrition. (Hurlock, 1980; Offer, 1973; Josselyn, 1968; Elkind, 1967; Bronson, 1967; Crow and Crow, 1965)

Variances

i) Age

Hurlock (1980) found that heightened emotionality is greatest during the last two years of childhood and the first two years of adolescence. Figure 7 clearly illustrates this phenomenon.

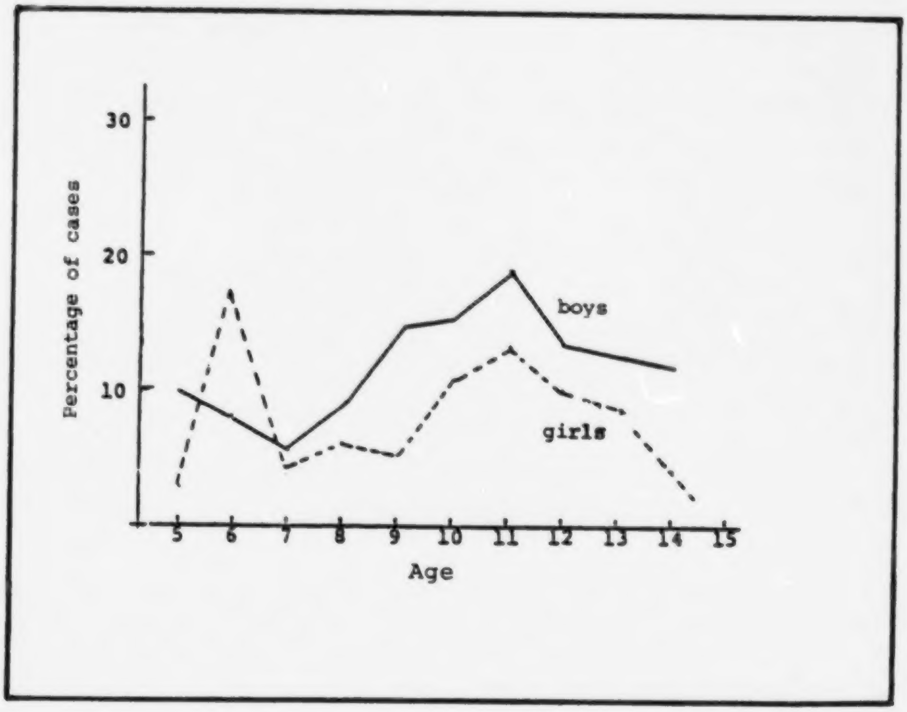

Figure 7. Rise and Fall of Excitability in Children and Adolescents. (From Hurlock, 1980, based on a study by J. McFarlane et al., 1954)

No direct studies dealing with sex and socio-economic variances were found in the search of the literature for this modal behaviour. Considering the nature of the modal behaviour, it would appear that research is needed on these two variances.

ii) Other Important Factors and Conditions

Hurlock (1980) lists the following predisposing causes of heightened emotionality:

1) Adjustment to new environments;
2) Pressure to live up to social expectations;
3) Adjustment to the opposite sex;
4) School problems;
5) Financial and family restrictions to interaction with peers;
6) Lack of appropriate adult guidance especially from parents.

Social factors are identified by many studies as the most prevalent cause of heightened emotionality. (Cole and Hall, 1970; Elkind, 1967; Bronson, 1967; Gallagher and Harris, 1964; Dunbar, 1958)

Poor health is significantly related to heightened emotionality. (Hurlock, 1980; Crow and Crow, 1965; Peckos, 1957) Frustrating stimuli that might be ignored at other times can be very annoying to the adolescent who is ill.

Modal Behaviour 5

> The style of coping with crises in adolescence is not unlike that for other periods in life. Typically the average adolescent will meet crises in this period in a manner that will increase his emotional stability. Crises serve to stabilize rather than threaten personality development. (Conger, 1977; Offer, 1973; Jersild et al., 1978, 1963; Josselyn, 1959, 1971; Call, 1979)

i) Other Important Factors and Conditions

An exception to the modal behaviour is found in the view of the Committee on Adolescence, Group for the Advancement of Psychiatry (1974), which identifies recurrent alternation of episodes of disturbed behaviour with periods of relative quiescence as a unique characteristic of adolescence. The episodes are intermittent and length of time will vary with individuals.

Willikens (1967) observed that early adolescence is marked by unstable emotions which may be difficult to detect because youngsters in this age group will hide their feelings through use of mechanisms such as being noisy to cover their lack of confidence.

With the increasing emphasis on research on normal adolescents (Offer, 1973), serious reservations have been raised about the predictions of inevitable "storm and stress" during adolescence. Typical of the emerging attitude is the following statement from Conger (1973):

> It appears that the stresses that adolescence imposes on the individual, particularly in our culture, do not for the great majority, lead to the high degree of emotional turmoil, violent mood swings and threatened loss of control suggested by clinical theorists. All of these consequences clearly characterize some adolescents, but the evidence suggests that there has been an unwarranted tendency on the part of clinicians to generalize too readily to the average adolescent findings obtained from a limited segment of the adolescent population (particularly middle to upper-middle class patients and sensitive, alienated young writers).

Although he recognized some influence of cultural factors, Hall (1904) theorized that heightened emotionality was universal in adolescents and characterized the period as fraught with "storm and stress", the inevitable result of the physical changes occurring in the body during sexual maturing. This tended to support the traditional belief that adolescence would be marked by emotional disturbances and upheaval.

Some modern-day theorists may yet see adolescence as a period of extremes in emotional behaviour, bordering on the pathological, but they rarely agree with Hall's restriction of source to biological origins. (Blos, 1967; Josselyn, 1959, 1971; Call et al., 1979)

3. Aggressive States

Modal Behaviour 6

> Outbursts of anger are common during early adolescence but in general reduce with age and become more controllable. (Biehler, 1974; Offer, 1973; Group for the Advancement of Psychiatry, 1974; Gesell, 1956)

Variances

i) Age

Definite efforts are made to avoid showing anger at 15 and anger responses are less frequent at 16 and generally not overt. The adolescent will walk away or avoid an anger-provoking person. (Gesell, 1956)

In the study by Offer (1973) the greatest amount of turmoil and aggressive behaviour, particularly that expressed towards parents, occurred in early adolescence, ages 12 to 14. Bickering was the most characteristic form of disturbance, but the intensity of the emotions was not considered by the adolescents themselves to be very deep.

The normal adolescent appeared to have sufficient inner ego resources to handle aggressive manifestations.

It is not clear in the literature whether anger becomes increasingly controllable in consistent steps through ages 12 to 16 or if it is in erratic stages. Some authors hold that aggressive behaviour tends to be cyclical with recurrent periods of negativism. (Committee on Adolescence, Group for the Advacement of Psychiatry, 1974; Gesell, 1956) This is illustrated in excerpts from Gesell's growth gradients for anger in which the most typical responses at each age are:

12 years: physical violence and verbal retort;
13 years: sulking, some crying, scowling and frowning;
14 years: verbal responses prevail; some may be unusually violent;
15 years: leaving the room or responding verbally in a sarcastic or negative way.

ii) Sex

In a survey by Remmers and Radler (1957) a substantial number of adolescents reported that they had trouble keeping their temper. This feeling was much more prevalent among girls.

Sex role in Western culture implies an inhibition of aggressiveness on the part of females, but initiative on the part of males. (Holtzman, 1968)

Studies of the sexual differentiation and basic neuro-physiological differences in both humans and other animals, particularly primates, suggests that females tend to be more passive and less physically aggressive than males. Numerous scientific studies have indicated that testosterone* has a direct relationship to the level of aggressive behaviour. During adolescence, testosterone increases almost ten-fold in boys, although barely doubles in girls. Thus this physical difference alone suggests greater externalized physical aggressiveness in males. (Conger, 1977)

iii) Socio-Economic Conditions

Lower-class boys and girls appear to be more openly aggressive than middle-class children. (McCandless, 1979; Lesser, 1959) Likewise, Epstein (1963) reports that lower-class 13-year-old adolescents had more memories containing references to angry feelings and aggressive behaviour, while middle-class adolescents had significantly more memories involving euphoric affect in sibling and parental relationships.

iv) Other Important Factors and Conditions

Anger is more likely to occur when the adolescent is hungry, tired or ill. (Jersild et al., 1978; Young, 1937; Stratton, 1939; Gates, 1926)

Modal Behaviour 7

> The characteristic response to anger in early adolescence is to leave the scene. When angered, the adolescent will characteristically pace the room, exhibit general restlessness, may go out for a walk or indulge in strenuous exercise. Infantile behaviour such as stamping of feet may occur occasionally. (Cole and Hall, 1970; Crow and Crow, 1965; Gesell, 1956)

Variances

i) Age

Physical violence (a sort of extension of childhood ways) and verbal retort by adolescents are more frequently indulged in at age 12. (Gesell, 1956)

ii) Sex

An exception to the modal behaviour was noted in a study of creative high school girls. (Halpin et al., 1973) The authors found that creative girls tended to express anger openly with close friends. Some, incidentally, would follow such expressions with efforts to get even.

Considering the nature of the modal behaviour, it would appear that research is needed to explore variances in socio-economic conditions.

Modal Behaviour 8

> The most frequent cause of anger for adolescents is found in social relationships. (Halpin et al., 1973; Greenfeld and Finkelstein, 1970; Crow and Crow, 1965; Jersild et al. 1978; Hicks and Hayes, 1938)

Variances

i) Sex

Recalling their adolescent period in high school, a group of college males reported that anger both by and towards parents was an often expressed emotion in their home life. (Halpin et al., 1973)

ii) Other Important Factors and Conditions

In an early study of junior high school students, Hicks and Hayes (1938) found anger was provoked by:

1) being teased;
2) unfair treatment by others;
3) things not going right;
4) sarcasm and bossiness.

In order of frequency, anger is provoked in adolescents by 1) people being unfair, 2) siblings taking their property or infringing on private area, 3) being teased, 4) being talked about, 5) parental discipline, 6) opposite sex. (Greenfeld and Finkelstein, 1970)

Anger is intensified when the adolescent perceives the provocations of others as intentional. (Jersild, 1978; Kaplan and Goodrich, 1957) School, as a source of anger, occurs more frequently in adolescence than in childhood. There is a substantial increase throughout the adolescent years in citing persons in the school setting as being disliked or resented. Also cited as sources of annoyance were prescribed rules and duties. (Jersild and Tesch, 1949)

Fear and anger are closely interrelated. Both are aroused by conditions that threaten the adolescent's welfare -- his physical safety, comfort, plans and desires. Often he becomes angry at himself for being afraid. (Crow and Crow, 1965; Jersild et al., 1978)

Modal Behaviour 9

> In early adolescence, particularly ages 12 and 13, the verbal retort supplants physical violence as a common expression of anger. (Cole and Hall, 1970; Gesel, 1956)

Variances

i) Age

Deflected response, or taking out anger on another, also begins to appear at about age 13. (Gesell, 1956)

ii) Sex

Offer (1973) reports that boys cope with anger much as they do with anxiety. They readily admit the presence of the emotion and in cases where another person is the cause, resort to sublimating activity rather than direct attack upon the source or to erecting elaborate defence mechanisms. Physical activity such as sports is considered a good outlet for pent-up hostility. Bandura and Walters (1959) observed that physical violence is rarely used by non-delinquent adolescent boys.

iii) Socio-Economic Conditions

There is considerable evidence that physical aggression is used more often than verbal means to control the youngster's behaviour in low income homes, thus producing a higher tolerance for aggression in their daily lives. (National Advisory Commission on Civil Disorders, 1969; Chilman, 1965; Clark, 1965; Moles, 1965; Sears, 1961)

Modal Behaviour 10

> The early adolescent's perception and interpretation of violent aggressive acts is related to differences in personal life patterns. (Greenberg and Gordon, 1972)

Variances

i) Socio-Economic Conditions

In a study of 14-year-olds, Greenberg and Gordon (1972) did not find a significant difference between lower income and higher income groups in their perception of violence. This is in contrast to previous studies which did note a tendency for low income groups to see less violence in television shows. Disadvantaged 14-year-olds perceived greater reality in television violence and found such episodes more acceptable and, incidentally, more humorous than advantaged 14-year-olds.

4. Inhibitory States

(a) Fear

Modal Behaviour 11

> The type of fear will vary according to age, sex, and socio-economic conditions. Individual differences within categories will occur as well, depending on what is important in the unique life-style of the individual. (Hurlock, 1980; Greenfeld and Finkelstein, 1970; Crow and Crow, 1965; Jersild et al., 1978; Gesell, 1956).

Variances

i) Age

In a study of self-reported fears, ages 13 to 85, Spiegler and Liebert (1970) found no significant age differences in the occurrence of unrealistic fears. Their data suggest that new fears and intensity of already existing fears may occur in periods of increased stress accompanied by greater responsibility and productivity. Consequently, it is not uncommon for there to be an increase in the number of realistic fears at the outset of adolescence which will taper off during early adulthood.

In general, a decline in the number of fears between ages 12 and 16 has been observed. (Spiegler and Liebert, 1970; Gesell, 1956)

Following his cyclical theory of development, Gesell (1956) found the following fears characteristic of each age:

12 years: in general, a fearful age; fear of the dark mentioned most;

13 years: experiencing a decline in fearfulness; half as many fears as at 12; now includes crowds and high places as sources of fear;

14 years: noticeably fewer fears; reports fears of animals (especially snakes), the dark, and high places, all about equally;

15 years: slight increase in number of fears experienced over age 14;

16 years: relatively few fears reported; girls still report fear of dark, especially dark streets; new social situations are mentioned.

The Angelino, Dollins and Mech (1956) study revealed the following age differences in fears:

Fear of animals shows a rapid decrease after nine, hitting a low at about 12 years;

Fear of school peaks between ages 11 and 12 for girls and around age 13 for boys.

ii) Sex

Boys are less likely to exhibit their fears than girls. (Hurlock, 1973; Croake and Knox, 1971; Greenfeld and Finkelstein, 1970; Spiegler and Liebert, 1970; Croake, 1967; Gesell, 1956)

Girls characteristically place a higher value on personal safety and show more fear of animals and strangers than boys. (Hurlock, 1973) They show a fear of being alone in the dark at a more advanced age, 16, and express more fear of parents than do boys. (Greenfeld and Finkelstein, 1970)

In the Angelino, Dollins and Mech (1956) study, girls expressed more fear than boys about social relations and natural phenomena.

iii) Socio-Economic Conditions

In a comparison of fears held by different socio-economic groups, characteristically, adolescents from lower socio-economic groups show a greater number of fears (Croake, 1967) and have a greater fear of parental threat. (Hurlock, 1980)

Qualitative differences in the fears of pupils from low socio-economic and high socio-economic backgrounds were reported by Angelino, Dollins and Mech (1956) as follows:

> Low socio-economic boys expressed more fear of teachers; higher socio-economic boys of susceptibility to stage fright;
>
> Higher socio-economic girls had more fears of school than lower socio-economic girls.

iv) Other Important Factors and Conditions

Fear is not inherited. For the most part, specific fears are learned by conditioning, through observation as well as experience. (Willikens, 1967)

Unwholesome fears may be aroused in adolescents by unthinking adults. Parents and other adults who criticize adolescents' fear reactions often force them to become apprehensive about fear, considering it a wrong rather than a normal human reaction. Consequently, it often takes more courage for the adolescent to show fear than to conceal it. (Willikens, 1967)

The overriding effect of fear on other aspects of life are shown in a study of 228 male high school students, grades 9 to 12, on perceptions of occupational prestige and occupational aspirations conducted by Tsang and Carter (1970). The researchers were able to demonstrate that subjects motivated to avoid failure were less accurate in their perceptions of occupational prestige and had lower occupational aspirations than subjects who were success-oriented in their motives.

In a study of 1,100 pupils aged 9 to 18, drawn from two different socio-economic levels, Angelino, Dollins and Mech (1956) made an interesting comparison of fears and worries. Using an introspective-projective method to elicit from pupils what they thought were the fears of their peer group, the authors reported that there was little difference in the number of fears experienced by low socio-economic and high socio-economic pupils. Qualitative differences, however, were noted.

Modal Behaviour 12

> The dominant fears of adolescents are related to social situations and represent a significant change from childhood fears. (Hurlock, 1980; Croake and Knox, 1971; Cole and Hall, 1970; Greenfeld and Finkelstein, 1970; Croake, 1967; Gesell, 1956) Moreover, adolescents' fears tend to

concentrate on concerns about school. (Greenfeld and Finkelstein, 1970; Cole and Hall, 1970; Croake, 1967; Angelino, Dollins and Mech, 1956; Angelino and Shedd, 1953)

Variances

i) Age

In a study by Angelino and Shedd (1953) on over 500 pupils, ages 10 to 18, in public school, it was observed that 13- to 14-year-olds were concerned primarily with school-related fears. There was a noticeable shift at 15 to personal conduct fears and to political and economic fears at 16.

ii) Other Important Factors and Conditions

Based on studies by Croake (1967) and Knox (1971), adolescents are more fearful of specific political situations than of school. Intensity of such fears, however, was diminished in the most recent study. The results of the Croake (1967) study are confusing, however, because of admitted methodological weakness by the researcher. It is worth noting that rank of school as a major fear in these studies was either third or fourth for boys and upper and lower socio-economic groups. Girls ranked it sixth in the Croake and Knox study (1971).

Gesell (1956) reports a higher incidence of fear of animals than more recent studies, which give the following order of frequency for fears.

Croake and Knox (1971)	political, personal relations, animals;
Cole and Hall (1970)	school, accidents, disease;
Greenfeld and Finkelstein (1970)	school, war (political), snakes
Croake (1967)	political, safety, home

A sample of junior high school students from the same school used by Hicks and Hayes (1938) served as a basic reference point for the Greenfeld and Finkelstein study (1970). This study showed a lower percentage of fear in general and a higher ranking of school-related fear. Political and economic fears became predominant at age 16.

Fears from childhood can persist into adolescence and even beyond. Jersild and Holmes (1935) found that nearly half of childhood fears of animals carried over to adolescence; one-third of childhood fears of accidents and injuries continued into adolescence; and two-fifths of fears related to personal failure or inadequacy aroused in childhood persisted into adolescence.

(b) Anxiety and Worry

Modal Behaviour 13

> A main source of anxiety and worry for adolescents at all ages (12 to 16) is the school. (Greenfeld and Finkelstein, 1970; Offer, 1973; Adams, 1973; Nicholson and Antill, 1981)

Variances

i) Age

Worry and anxiety are implicit in the adolescent's identification of his most common problems, and school is a persistently dominant personal problem as identified at all ages between 12 and 16. (Adams, 1973; Abel and Gingles, 1965; Kaczkowski, 1962) It peaks as a problem at 14 for boys and 13 for girls. (Adams, 1973)

ii) Sex

Girls show more concern about school marks than boys. (Greenfeld and Finkelstein, 1970) Boys were found to express concern about teachers not trusting them as individuals. (Offer, 1973)

In a comparative analysis of cross-cultural studies, Remmers (1962) concluded that the self-perceived problems of adolescents are ranked with a high degree of similarity. High school problems tended to be of major concern to all. Concern about health was minimal for all teen-agers, regardless of culture. Worry about ability and vocational goals occurs earlier in boys than in girls. (Hurlock, 1973) Girls focus earlier on personal appearance and social acceptance.

Offer (1973) observed that adolescent boys showed anxiety expressly about performing before others, their abilities, evaluations made of them by others, and being part of a group. Clearly, their anxieties centred on social activities, particularly on those that were likely to occur in the school setting.

Interestingly, sex did not appear as an important differentiating factor in the Remmers (1962) survey wherein boys and girls saw study as their most serious problem and being a good athlete a problem of minor concern. Both identified wanting to make friends as a major concern; however, girls had more intense feelings about it. These data were confirmed in a recent study by Nicholson and Antill (1981) as shown in Figure 8. This study of problems experienced by adolescents listed them in order of importance as:

1. Adjustment to school;
2. Socio-psychological relationships;
3. Personal relationships;
4. School curriculum and educational approaches;
5. Finances, housing and employment;
6. Home and family;
7. Social and recreational activities;
8. The future;
9. Morals and religion;
10. Dating, sexuality and marriage. (Nicholson and Antill, 1981)

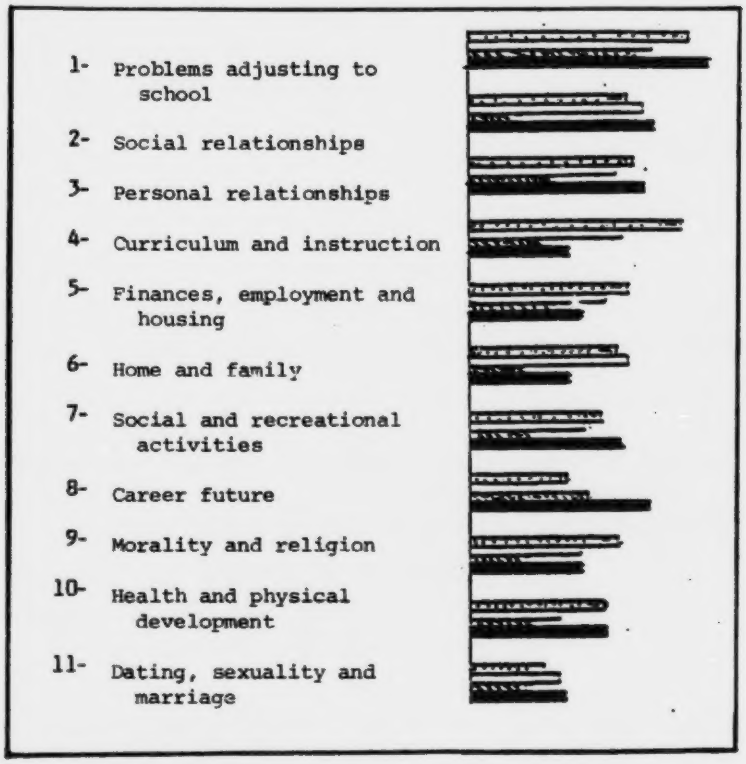

Figure 8. The Importance Adolescents Place on Various Personal Problems. (From Nicholson and Antill, 1981).

⬚ boys 13 ½ ☐ girls 13 ½

▨ boys 17 ½ ■ girls 17 ½

Modal Behaviour 14

> Anxiety is more likely to occur in an adolescent if the individual feels that he is unable to meet cultural expectations. (Hurlock, 1980; Offer, 1973)

Variances

i) Socio-Economic Conditions

The amount of worry is about the same in different social classes but differs in specific detail. For example, school worries for middle-class youngsters centre on concerns about being admitted to the college of their choice, whereas lower socio-economic youngsters are concerned about reciting in class if called on and about perceived hostility toward them from teachers. (Hurlock, 1980)

ii) Other Important Factors and Conditions

Adolescent anxieties frequently arise from approach-avoidance conditions. Conflict stems from incompatible desires or impulses. Feelings of fear and anger may be in conflict without the individual being aware of it. Self-determination, interpersonal relations, competitive versus co-operative urges, and repressed guilt are some of the main sources of anxiety-producing stress. (Jersild, 1963)

Worry is characteristic of the adolescent years, but if it is to be controlled, the individual must take positive action and locate sources of concern. Competent adult assistance may be necessary if the worry is not to persist over long periods of time. (Crow and Crow, 1965)

When the typical adolescent is confronted with troubling emotional problems and conflicts, he is more likely to retreat from introspectiveness of any sort. (Conger, 1977)

Teenage problems or worries are well documented in the comprehensive survey by the Purdue Opinion Poll (1970-1973). The authoritative survey conducted by Offer et al. (1981) on adolescents' own perceptions of themselves probably best illustrates adolescent anxieties and problems. In addition to numerous comparisons between males and females, the authors compare adolescents from the 1960s and 1970s.

Modal Behaviour 15

> The shock of puberty is a source of increased anxiety at the beginning of adolescence. It may be anticipated that the adolescent will spend much time in deep thought, usually secretive, about the changes both physical and emotional that are taking place at the moment. Normally, outbursts of anxiety will begin to subside in about two or three years as the adolescent becomes accustomed to the new aspects of self. (Nixon, 1966; Group for the Advancement of Psychiatry, 1974; Iwawaki et al., 1967)

i) Other Important Factors and Conditions

Evidence from the use of projective tests reveals widespread anxiety among adolescents. (Jersild et al., 1978; Frank et al., 1953) In a list of problems compiled from a number of studies in the 1940s and 1950s, Cole (1959) identified the following most persistent and serious personal problems in order of intensity.

1. Suffering from nausea
2. Sexual development
3. Being under or over weight
4. Worrying over examinations
5. Worrying over atomic warfare

Modal Behaviour 16

> Marked changes in cognitive ability contribute to an increased potential for anxiety and worry in early adolescence. When the adolescent is capable of carrying out formal operations in his thinking, he is no longer confined to perceived realities and can formulate hypotheses which may serve to stimulate a vivid imagination. (Conger, 1977) Much worry and anxiety in adolescence is found in part in a new found ability to exaggerate, to "borrow trouble" as it were. It is not surprising, therefore, to see a disruption of psychological equilibrium occur at the onset of puberty in normal adolescence. (Conger, 1977; Hurlock, 1973; Crow and Crow, 1965)

i) Other Important Factors and Conditions

Signs of anxiety in adolescence are identified by Jersild et al. (1978) as follows.

1. Individual response out of proportion to a given situation: greatly upset by little things, excessive anger at trivial frustrations;

2. Underreacts; shows no anger when justified, apathetic when joy reasonably expected response;

3. Compulsive drives;

4. Acts out of character;

5. Excessive rigidity, self-righteousness, dogmatic;

6. Sets impossible standards for himself;

7. Failing in school.

5. Joyous and Happiness States

Modal Behaviour 17

> On the whole, most adolescents in the age range 12 to 16 are happy and experience many joys. (Group for the Advancement of Psychiatry, 1974; Coleman, 1961; Gesell, 1956; Jersild et al., 1978; Hurlock, 1980).

Variances

i) Age

Adolescents report varying degrees of happiness and reasons for being happy vary according to age. (Gesell, 1956)

At 12, most report being happy.

At age 13, there is an increasing number of adolescents reporting that they are not very happy -- they tend to be only moderately happy or calm. Happiness is reported in terms of trips or visits, and success in school.

At age 14, there is an increase again of reported happiness. Sources of happiness are success in sports, clothes and boys asking girls out.

At 15, again the majority consider themselves happy. The sources of happiness are found to a large extent in school, politics, school activities, dances, and looking forward with anticipation to future things.

The majority of 16-year-olds describe themselves as happy with the sources of happiness being diverse and unspecified.

Middle and late teens find happiness in self-improvement and others' good fortune more than do younger children. (Jersild et al., 1978)

General good health plays an important part in the happiness of the adolescent, but it is not as important as it is for the younger child. (Hurlock, 1973)

ii) Sex

In their wishes for the future, boys placed happiness above athletic achievement, altruism or idealism but subordinated it to such things as academic achievement, wealth and interpersonal relations. (Offer, 1973) The following sex differences were noted in responses to questions in the Coleman study (1961). Boys favour leisure time activities involving organized outdoor sports, hobbies and watching television, in that order. Girls on the other hand indicate preferences for reading, being with the group, riding around town, and listening to music, in that order. Girls find more happiness in companionship and other social relationships than do boys, while boys find more happiness in sports and amusement and recreational places than do girls. (Jersild et al., 1978)

iii) Other Important Factors and Conditions

Jersild (1963) sees a variety of things that can cause an adolescent to be happy. Among them are: a feeling of satisfaction with home and school, the peer group, material objects (e.g., money, gifts), and sports and games. The causes of happiness depend more on a feeling within the adolescent. Hurlock (1980) lists good adjustment to a situation, feelings of superiority, release of pent-up emotional energies, and perception of comic elements in a situation as the major causes of happiness.

While it can be said, based on Hurlock's findings (1980), that most adolescents are more often happy than sad and discontent as they acquire confidence in themselves and their social skills, it is clear from Offer et al. (1981) that, compared with adolescents in the 1960s, those in the 1970s seem less happy. Offer cites the spiralling adolescent suicide rate in the last ten years as an indication of this. Violence among adolescents is also on the rise. It would also appear from a study conducted by the Institute of Social Research at the University of Michigan (1980) that the observed decline in happiness among adolescents especially affects those most educationally and economically advantaged. (Offer et al., 1981)

Modal Behaviour 18

> Affection for others becomes more intense during adolescence. (Hurlock, 1973) This affection is usually focused on peers, adults outside of the home and occasionally family pets. (Hurlock, 1980; Crow and Crow, 1965) In some instances, adolescent affection may even centre on real or fictitious heroes. (Hurlock, 1980) However, he will refrain from open displays of affection (e.g., kissing) for fear of ridicule, social disapproval, or rejection. Rather, he will express his affection by trying to be with the person, making the person happy and listening intently to everything the person says or does. (Hurlock, 1980; Crow, 1965)

Variances

i) Age

During early adolescence, affection is beginning to develop in relationships with the opposite sex. Adolescents at this age often develop crushes on older youths or adults. (Willikens, 1967)

During middle adolescence, affection may be found among small groups and close cliques. "Going steady" increases and adolescents may even experience a case of "puppy love". (Willikens, 1967)

In late adolescence, the number of people for whom the adolescent displays affection is smaller still. In fact, he may have already selected one special person for whom he shows affection. (Willikens, 1967)

ii) Sex

Girls are usually more ready than boys to start developing affection in relation to the opposite sex during early adolescence. However, Willikens (1967) cites a changing trend due to social practices which seem to be hurrying boys' readiness and causing dating to be started at an earlier age. Willikens also observed that girls often develop more crushes than boys.

iii) Other Important Factors and Conditions

In most studies cited, affection and love were dealt with basically on the same level. According to Hurlock (1973) the difference between love and affection is that love is a stronger emotion, usually directed towards the opposite sex, and containing elements of sexual desire.

According to Crow and Crow (1965) teenagers see love as a mutual affection that grows until you can't see any other person. To love and to be loved is highly important to the adolescent. Even though this love could probably be best described as "puppy love", it is most dramatic and serious for the adolescent. (Willikens, 1967; Jersild, 1963). Some authors interpret an adolescent's first sharing of love -- loving someone of the opposite sex and being loved in return -- as a revelation. (Jersild, 1963; Wenkart, 1949)

Erikson (1963) describes adolescent love as a means of defining identity. The adolescent, by projecting his diffuse ego-image on someone else, sees the ego-image reflected and clarified.

It is obvious from this search of the literature that information on joy and happiness among adolescents is seriously lacking. Of the books published in the 1970s that were surveyed in this search, Hurlock's was the only one to give any particular attention to these emotions. Perhaps the preoccupation with the disturbed and atypical adolescent has again distorted our view of adolescence. We know more about their anger and inhibitory states than their joys and pleasures.

6. Self-Concept

Modal Behaviour 19

> A major task of adolescence is the re-evaluation and redefinition of the self-concept. The advent of puberty and the shift in society's attitude

toward the individual force major changes in the concept of self; thus, the adolescent typically begins an assessment of himself from several perspectives, with particular emphasis on the real and the idealized self. (Bohan, 1973; Cole and Hall, 1970; Jersild, 1963)

Variances

i) Age

Works dealing with the relationship between age and self-concept show this relationship to be very weak in normal adolescents. (Wyliue, 1979; cited by Offer, 1981) However, Rosenberg (1979, cited by Offer, 1981) claims to have observed inferior self-concept among young adolescents compared to older adolescents.

ii) Sex

Bohan (1973), using the Coopersmith Self-Esteem Inventory (1959, 1967) to assess age and sex differences in self-concept, reports a significant drop in self-concept among 10th-grade girls. It is hypothesized that the girls' recognition at this time of the female role expectations for them results in a devaluation of self, concomitant with the perceived relative inferior status of the female role. This finding is in conflict with earlier studies by Engel (1959) and Piers and Harris (1964). It is in accord with a previous study by Katz and Zigler (1967) in which a lower self-concept was found for adolescents than younger children.

Collins (1972) reported significant improvement of self-concept through a self-improvement course for females, ages 13 to 18, who had social-emotional problems. The self-improvement course was an adjunct to case-work therapy.

According to the self-concept assessment tests administered by Offer et al. (1981), feelings of inadequacy are greater among girls than boys. Almost 40 per cent of adolescent girls in this study considered themselves ugly or unattractive. On the other hand, they revealed a more positive attitude than boys on personal and social values. Boys had more positive feelings about themselves in relation to achievement, educational aspirations and ability for self-affirmation.

Most research on sex-related differences in self-image are based on the premise that girls have a lower self-image than boys. But in studies based on females' unique biological abilities or the suggestion that women have different aspirations than men, the prediction promotes a self-image in girls equal to or greater than that of boys. (Offer et al., 1981)

iii) Other Important Factors and Conditions

Early adolescence is a major first step from the self-centred world of childhood to the mature adult world of thoughtful social interrelationships. Adolescents in this period are still very self-centred. Thus, they are very egocentric, with strongest desires centred on gaining social approval. Often the interest in self is expressed in a desire to display a sense of responsibility. Failure and procrastination are not uncommon, however, and adults should be patient as the ability to accept responsibility will follow the desire if one is not completely devastated by his failures. (Willikens, 1967)

The fifth psychosocial stage in Erikson's theoretical formulation of ego development seems very apropos this modal behaviour. Erikson's (1968) fifth psychosocial crisis, occurring somewhere between ages 12 and 18, involves the conflict between identity and role confusion. The goal of this period is to utilize the adolescent's new-found integrative abilities to achieve ego identity. (Elkind, 1970) The individual brings to bear all that he has learned about himself in the past and regroups it into new patterns that give a sense of direction and continuity to his future. The process is particularly important to the preparation for adult sexual and occupational roles. (Biehler, 1974) Erikson's emphases for this period are elaborated in detail in his book, Identity: Youth and Crisis (1968, 1981).

Let us now examine a few considerations on the evolution of sexual behaviour, which is so closely linked to the social integration the adolescent must achieve.

Although sexual identity starts before adolescence, the glandular changes that come with puberty accentuate sexual differences. In man as in most of the higher species, only a very small part of these differences are genetically programmed. Although these changes are initially stimulated by internal conditions, mature adult sexuality consists of more than the simple physical changes that occur at puberty. During adolescence, an individual must take on new interests, attitudes and models of behaviour. He must master various tasks, including acquiring knowledge of sexuality and of approved sexual roles. While respecting socially accepted values, he must learn to meet his own needs for intimacy and to play a role suited to members of his sex. Hurlock (1973) stated that normal adult sexuality is equivalent to heterosexuality in which interest and affection are directed toward members of the opposite sex. Social factors are a major determinant of the way heterosexuality is expressed. Although physical changes and the development of primary and secondary sexual characteristics orient sexuality, they do not develop it fully. The specific role of sexual hormones in determining differences in sexual behaviour is still unknown. Several studies have focused on this subject, but none have proven conclusive. Hamburg and Lunde (1966), cited by Wattenberg (1973), summed up the current state of knowledge in this field.

> Although there is still little evidence of the role of sexual hormones in the development of differences in human sexual behaviour, several interesting fields remain unexplored. Recent research in various disciplines indicates a possibility of complex interaction between genetic and hormonal factors, and environmental factors. These complex

interactions might determine the development of differences in human sexual behaviour. (Hamburg and Lunde, 1966)

Social factors have a profound influence on expression of heterosexuality. Margaret Mead (1961) identified some acceptable sex roles in various cultures. Of the most important, those most closely affecting modern man are given below.

1. Wife and mother -- the most widespread role in American culture. Douvan and Adelson (1966) indicated that the primary concern of adolescent girls in all social strata and all ethnic groups was to prepare for and successfully fill this role.

2. The adult male modal role is to father children and provide for their needs. Douvan and Adelson found that adolescent boys were less concerned over their future adult role than girls.

3. The adult male who chooses not to marry will still play a certain role prescribed by society; celibacy, religious or other, sexual abstinence and renunciation of procreation are some forms this role can take.

4. Adult women who do not marry or have children but enjoy religious status.

5. In some cultures, adult males take on an institutional feminine role -- transvestism.

6. In some sectors of society, women play a male role.

7. In some cultures, ceremonial, non-procreative roles are important.

8. Sexually mutilated persons -- either by congenital defect or by society; society expects them not to marry or produce children.

9. Commercial and professional prostitution as found in societies such as American society.

In most cultures, there is a differential relationship between chronological age and expectations of sexual behaviour.

The age at which sexual maturity is reached and the rate at which the process evolves affect heterosexual interest. This transition toward heterosexuality often generates intense emotions. Research indicates that learning plays an important role in the development of heterosexuality and that the individual must acquire knowledge of sexuality and learn appropriate sexual roles. Hurlock (1980) lists the following essential environmental conditions for proper heterosexual development.

1. There must be a sufficient number of members of the opposite sex of the same age, intellectual status and personal equilibrium to allow an adolescent to choose suitable companions with whom he can maintain pleasant relations.

2. Parents and other adults must provide encouragement, sympathy and kindness. (Hurlock, 1973)

A study by Shipman (1968), cited by Hurlock (1973), noted interestingly that the age considered proper for acquiring the knowledge necessary for marriage occurred some time after menarche.

Offer (1973) noted in his study of boys that, despite their claims, most adolescents demonstrated conservative and reserved sexual behaviour. Although only ten per cent of subjects had had sexual relations by the end of their junior year in high school, all showed a liberal attitude toward this behaviour. Eighty per cent approved of premarital sex after high school. Fear of pregnancy posed the greatest obstacle.

According to Hurlock (1980), heterosexual behaviour in the American culture follows successive stages, from a crush to marriage, moving through hero worship, puppy love and engagement. Offer (1973) concluded that the scope of modal adolescents' sexual experiences was limited, and claimed that sexual education was conducted blindly. McCandless (1979) provided an example of misinformation about masturbation. Although it is known that masturbation itself has no harmful effects, some young people suffer through guilt feelings and lowered self-esteem. They are victims of old wives' tales.

Middle-class culture places great emphasis on sexual repression. This is one of the most valued ways for dealing with sexual interest and urges, although adolescents in this layer of society are the most sexually frustrated. Ausubel (1954) downplayed the relationship between severity of sexual taboos and intensity of conflict experienced by the adolescent. He concluded that only adolescents who interiorize the values of their culture show an increase in emotions over this problem. Although adolescents are sexually frustrated, McCandless (1979) notes that there are some specific advantages in the middle-class structure that offset this frustration: adolescents are granted a psychosocial moratorium on responsibility; parents and officials protect them from the disastrous long-term consequences of their errors; they receive encouragement from parents to develop valuable skills for industrial society. All of this provides some compensation for emotional tension.

Adults might improve their attitude, however, if reminded that much psychological energy is required to control biological urges, especially when these may be at their peak.

Modal Behaviour 20

> The self-concept is learned through interaction with the interpersonal and objective environment. It is a complex of many views of oneself. The

> individual during adolescence becomes especially observant of his intellectual competence, physical attractiveness, physical skills, social attractiveness, sex identification, leadership and moral qualities, and sense of humour as they unfold. (McCandless, 1979; Jersild et al., 1978)

Variances

i) Age

Characteristically, when asked in the Gesell (1956) study to locate the self, adolescents showed the following age differences in response:

12 years	response was comprehensively "all of me";
13 years	emphasized thinking;
14 years	emphasized emotion;
15 years	associated it more with the brain;
16 years	usually referred to the self as an inseparable whole.

ii) Sex

Musa and Roach (1973) found a statistically significant relationship between self-evaluation of personal appearance and total self-concept. There was a general, widespread dissatisfaction among girls with their appearance and a desire to change appearance.

iii) Other Important Factors and Conditions

Revlin (1959) studied the attitude toward self of high school students nominated as creative by teachers. The students so nominated when compared with a group identified as non-creative by teachers rated themselves as having more confidence in relationships with people. They were also seen as more popular by peers. Two factors that appear to be associated with creativity in this study were social confidence and a somewhat higher educational attainment of parents.

Modal Behaviour 21

> Self-esteem plays a major role in the development of a positive self-concept in adolescence. It is a product of the value the individual places on the complex of views he has of himself -- whether approving or disapproving, accepting or rejecting. (McCandless, 1979)

Variances

i) Age

Measures of self-esteem and esteem for parents were made of 159 high school students by Bruch, Kunce, and Eggsman (1972). The study was undertaken to ascertain age and socio-economic differences. Results were as follows:

1. disadvantaged subjects scored higher on self-esteem;
2. older students had lower father-esteem scores;
3. culture and age were not related to esteem for mother;
4. the greatest discrepancies between self and parental esteem scores occurred among the disadvantaged.

The authors found that result no. 2 agreed with a previous study by Long, Ziller, and Henderson (1968). Trowbridge (1972) concluded that self-concept seems to decrease with age and to vary insignificantly for sex.

ii) Sex

In a longitudinal study over a six-year period, beginning with the subjects in the sixth grade, Carlson (1965) found self-esteem independent of sex at both the preadolescent and adolescent level. These results were obtained even though girls showed an increase in social orientation while boys increased in personal orientation, thereby reflecting different processes in personality development of boys and girls during adolescence.

Soares and Soares (1969) were unable to find significant sex difference in self-esteem in a study of disadvantaged and advantaged children in grades 4 through 8.

Offer et al. (1981) concluded that overall self-esteem was equally high in both boys and girls. Another picture emerges, however, when the various aspects of self-esteem are studied separately.

The most commonly advanced hypothesis for the differences is that of identification of adolescent girls with the female role imposed by society. This stereotype is a major determinant of the type of experiences and activities the young girls will choose to attain womanhood.

iii) Socio-Economic Conditions

Most interestingly, Soares and Soares (1969) report differences in self-esteem by socio-economic group, with higher self-perceptions recorded for the disadvantaged. Both groups showed positive self-perceptions according to the authors. The lower self-esteem of the advantaged group is attributed by the authors to greater pressures and expectations by parents and adults. One may conclude that the challenge in education of the disadvantaged is to raise levels of aspiration without lowering self-perception as the child moves into middle adolescence. The disadvantaged individual's educational experiences during 12 to 16 years of age are crucial.

There are conflicting findings in studies of self-concept and socio-economic status. Ausubel and Ausubel (1963), Erikson (1963), and Witty (1967) postulated that children of low socio-economic status reflect the negative image society holds of them. Support for this view is found in the studies of Deutsch (1960), Long and Henderson (1968), and Wylie (1963). Others found no significant differences in self-concept of children of different socio-economic status. (Coleman, 1966; McDaniel, 1967; Scott, 1969) Some investigations report a surprising finding that low socio-economic children may even have a more positive self-concept than middle-class children. (Clark and Trowbridge, 1971; Zirkel and Moser, 1971; Green and Rohwen, 1971; Soares and Soares, 1969; Trowbridge, 1969, 1970)

In a recent study of differences in self-esteem for different socio-economic levels, Trowbridge (1972) administered the Coopersmith Self-Esteem Inventory to 133 classrooms from a total of 42 elementary schools, rural and urban. Children were included from Grades 3 to 8. Results clearly indicated that the socio-economic factor was highly significant, as was race and density of population. Low socio-economic, black, and rural small-town children recorded higher self-concept scores on the Coopersmith Self-Esteem Inventory than their respective counterparts.

The specific areas on the Coopersmith Self-Esteem Inventory in which low socio-economic youngsters obtained higher self-concept scores is very revealing.

A breakdown of items portrays the lower socio-economic child as feeling more sure of himself and believing he can take care of himself. He makes up his mind readily and is assured that what he has to say is worth saying. In general, he indicates that he is happy, sure of himself, and not usually bothered by things.

Likewise, with respect to peers, the low socio-economic youngster feels more comfortable with peers, believes he is likeable, and assumes that he is popular.

Most strikingly, Trowbridge found that the low socio-economic child perceives himself in a more favourable light than do middle-class children on the school subscale. Low socio-economic children revealed a higher level of feeling worthwhile in school and in the eyes of their teachers. These puzzling results, Trowbridge explains, are probably due to low socio-economic children's lower aspiration level. They also perceived parents, teachers and peers as expecting less of them. For them, to excel seemed to be equated with stress and tension. Further, when low socio-economic children perceived school as poor, they did not relate the experience to themselves; whereas middle socio-economic children "tended to view shortcomings of the school experience as being their fault".

iv) Other Important Factors and Conditions

In a study designed to compare the self-concepts of Canadian Grade 11 adolescents differentiated in terms of ethnic background and geographic location, Dooley (1970) found significant differences in self-concepts. The Alberta French minority expressed greater assertiveness, effectiveness, and sociability than the Quebec English minority; whereas the Quebec French majority showed higher scores than the Alberta English majority on the affective, assertive, effective and sociable dimensions of expressed self-concept. Only the Alberta French showed no discrepancy between the self and the ideal self-concept. Dooley suggests that achievement motivation, stemming from the combined effects of migration and an environment where co-operation with other ethnic groups is vital may account for their greater self-actualization displayed in this study.

Modal Behaviour 22

> A new kind of egocentrism begins to unfold in adolescence. It is an egocentrism which is clearly distinguished from the egocentrism of earlier childhood largely in terms of the increased ability to conceptualize thought, both of self and others. As he becomes capable of formal operations and can consider hypothetical possibilities, the early adolescent characteristically believes that others are as preoccupied with his appearance and behaviour as he is. (Conger, 1977)

Variances

i) Age

As one moves through adolescence, he will normally omit the belief in the omnipotence of his new-found reflective capabilities and replace it with an understanding that the appropriate function of reflection is to confirm reality by predicting and interpreting experience. (Horrocks, 1970; Piaget 1967)

Cognitive performance undergoes significant change somewhere between ages 12 to 15, varying for the most part in terms of cultural differences. The advent of puberty at about the same time is seen as merely a correlated event with no evidence of a causal relationship. (Horrocks, 1970; Piaget, 1967)

Yudin (1966) observed a significant difference in the development of formal thought among normal and low intelligence groups. Appreciable gains in normal subjects occurred between ages 12 to 14; in low intelligence youngsters, 14 to 16.

Although Wolfe (1963) found that youngsters classified as abstract thinkers did better than those classified as concrete thinkers in formal thinking between ages 11 and 13, he concluded that very few did well until age 14. Further, he contends that these are major differences between 11 and 13 years of age. Elkind found evidence to support Piaget's formulation that adolescent thought is more logically elaborate than the thought of children.

Desjarlais and Lazar (1979), in a study on acquisition of grammatical concepts, found that a wide range of concepts cannot be understood at the formal level before Grade 8, which corresponds to the start of the formal operations stage. Prior to this stage of cognitive development, concepts of grammar are acquired at the classification level only.

Formal operations become well established by the age of 15 or 16, and the egocentrism of adolescence diminishes as the youngster becomes more acutely aware of the differences between his own concerns and the interests and concerns of others. Adolescent egocentrism subsides also to the degree that the adolescent can integrate the feelings of others with his own emotions. (Elkind, 1967)

ii) Other Important Factors and Conditions

The crux of adolescent egocentrism is that, even though he can conceptualize thought in a uniquely different manner from the childhood reliance on concrete operations, the adolescent is unable to differentiate between objects towards which the thoughts of others are directed and those upon which he focuses his concern. Thus, his preoccupation with his rapidly changing self forces the adolescent to assume that all others see him as he sees himself. He is terribly self-conscious and he is self-critical, others are also assumed to be critical of him. (Conger, 1977). It seems to him that their feelings are a mirror image of his own feelings about himself.

Conger has identified other characteristics of adolescence which are a by-product of the level of cognitive development: the frequent use of irony and double entendres. Defence mechanisms undergo qualitative change from childhood to adolescence. Intellectualization is used by adolescents and represents a higher form of cognitive ability than the simple denials used by younger children. Feelings of depression occurring in adolescence may also relate to the development of formal operations as a facilitating factor.

CHAPTER 8 - SOCIAL DEVELOPMENT

The social development of the adolescent depends in great measure on opportunities afforded him to interact with his environment. It is by so doing that he learns. Since learning is the major psychological process for social change in the individual, this review of the literature has concentrated on learning as it functions through the principal agencies for socialization in adolescence: the family, the peers, and the school. Each modal behaviour in this section deals with an important aspect of interaction between the adolescent and his social environment formed by these socializing agencies.

1. Family

Families[1] are typed in the literature according to background features such as ethnicity, race, socio-economic status, religion and other factors. (Sebald, 1968)

Within the last century, there has been a major change in the internal structure of the family. Before 1900, most families were extended families, including not only the immediate members but the additional related and non-related members. With the movement of the family to urban areas, the formation of nuclear families became more evident. According to Sebald (1968), this has had an effect on adolescents by limiting adult models. The adolescent no longer has a direct contact or visibility of adult work as he did in the extended family and where before he formed friends with members of his extended family, he now seeks friends outside the kinship group. (Sebald, 1968)

According to all official statistics, the last decade has seen a gradual disintegration of nuclear families and a sharp rise in single-parent families, most headed by women.

Anderson (1968) in a study on parental deprivation found a significantly higher than average delinquency rate among boys living with their mothers following the loss of a father through death, parental separation, or divorce. Hetherington (1972) in a study on the effects of father absence on adolescent girls found that the girls are more likely to be more dependent adults and, as adolescents, anxious in their relationships with males. Daughters of widows tend to be shy and withdrawn and tend to start to date late in contrast to daughters of divorcées, who tend to seek out male peers and are more likely to begin dating earlier and have sexual intercourse at an earlier age.

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[1] The Social Sciences and Humanities Research Council of Canada, in a report of a Canadian conference on The Family and Socialization of Children, 1982, provides an excellent picture of the Canadian family and its problems.

Newman and Newman (1984) observed that children of divorced parents are more likely also to divorce than children of intact families.

McCandless and Evans (1973) in a study of sex identification and absent fathers found that the presence of an older brother will offset the father-absence effect on aggression and dependency in both boys and girls.

Hurlock (1973) observes a social mobility in which North American families move up and down the scale of socio-economic classes. Adolescents learn that social mobility can be achieved through education or marriage. (Cole and Hall, 1970)

Function

Sebald (1968) has listed three major ways in which the functions of the family have changed: a number of traditional family functions are being transferred to other institutions, the modern family is becoming a specialized agency and people are turning to the family to derive a sense of belonging and psychological security.

Jersild et al. (1978) see the adolescent's relationship to parents in three steps. As a young adolescent he continues to need his parents, to be dependent on them and to be influenced by them. The second step is when the adolescent must outgrow his childhood dependency on his parents, must renounce major allegiance to his parents and shift his allegiance to prospective mates and advance to the third step when he takes his adult role in society.

The family is seen by Weber (1974) as being a functional social system with boundaries, members, relationships, rules and roles. Weber feels that each family needs to achieve a level of comfortable functioning and members of a family help to maintain this balance overtly and covertly.

It is through the family that adolescents acquire basic social values. (Winch and Gordon, 1974)

Modal Behaviour 23

> Autonomy becomes a major developmental need during adolescence. Normally the move toward autonomy proceeds with minimal conflict and struggle within the family, but some antagonism is to be expected. Parents typically are understanding and supportive of the adolescent's need to become independent and self-sufficient. (Miller, 1974; Bruch, 1972; Horrocks, 1970; McCandless, 1970; Gold and Douvan, 1969; Offer, 1973, 1981; Long, Ziller and Henderson, 1968; Coopersmith, 1967; Willikens, 1967; Douvan and Adelson, 1966; Blos, 1961; Gallagher and Harris, 1958; Pearson, 1968).

Variances

i) Age

Although the move toward autonomy begins during early adolescence, Kohen-Raz (1971) and Jersild et al. (1978) feel that the individual continues, as in childhood, to need his parents. For a time he must establish bipolar relations with them, seeking independence from their control while depending on them for tension reduction and interpretation of experience.

An increase in dependency in early adolescence with a decrease in later adolescence was noted by Ziller and Henderson (1969) in a study investigating developmental changes in self-concept during adolescence. It was suggested that the decline in dependency after Grade 9 might be another example of anticipatory socialization in preparation for independence of early adulthood.

According to Douvan and Adelson (1966), there is a sharp increase in autonomy during adolescence with the largest behavioural change taking place in dating.

In early adolescence, adolescent antagonism or so-called rebellion should be expected to develop and can best be dealt with as normal behaviour and is best treated with understanding. (Group for the Advancement of Psychiatry, 1974; Willikens, 1967)

Miller (1974) in his observations of early adolescence found that it is associated with a wish to be free from dependent feelings on parents.

ii) Sex

In a very large sample of adolescents, Douvan and Adelson (1966) found that boys were significantly more likely to be actively engaged in establishing independence from parental control than girls. Adolescent girls were more likely to consider their parents' rules to be fair, right, or lenient; moreover, girls are more likely to progress from a dependent identification of authority without the phase of defiance.

Jerome Kagan and Howard Moss (1962)[1] found in a longitudinal study of development from early childhood to maturity that dependency was a more stable trait in girls than in boys. Girls who were most dependent in childhood were also most dependent as adolescents and as adults. Emotional dependency for girls in our society is found to be fairly acceptable but is less so for boys. (McCandless et al., 1961)

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[1] The Kagan and Moss (1962) study no longer reflects the sex-related differences that have prevailed for the past 10 years. Black (1976) remains highly critical of the conclusions of studies by Maccoby and Jacklin (1974) and Kagan and Moss (1961) on differences between adolescent boys and girls.

In accord with McCandless's findings, Miller (1974) found early adolescent boys to be particularly intolerant of control by women, especially their mothers. Girls, however, were found to lean on mothers for advice, some even maintain a child-like dependence.

iii) Other Important Factors and Conditions

The emancipation phenomenon is unique to North Americans in Western civilization. One facet promoting early emancipation in North America is the substituting of peers for parent dependency. (Meyers, 1946)

Offer (1977) maintains that one of the main functions of adolescent rebellion in normal youth is to serve to initiate or reinforce the process of becoming emancipated from parental authority or dependence. In this same vein, Gallagher (1964), Pearson (1968), and Blos (1970) see rebellion by adolescents as manifestations of thwarted attempts at independence.

In order to accede to the adolescent's desire for self-control during the process of emancipation requires a sacrifice on the part of parents in relinquishing authority, developing and maintaining self-control and restraint, and in adjusting to and accepting new values and customs. (Meyers, 1946) The adolescent, typically, resents domination and his struggle against dominance depends on whether he feels that the dominance is reasonable. (Horrocks, 1969; Bernard, 1945; Levy, 1943)

Willikens (1967) maintains that hidden beneath the outward manifestation of lack of respect for parents by adolescents when disciplined, the adolescent harbours a feeling of satisfaction and a sense of security in their concern.

Offer (1973) agreed with Freud's idea that when an adolescent rebels it is often in the form of negation -- he does what his parents do not want him to do. (Freud, 1925)

In their investigation, Offer et al. (1981) conclude that a normal adolescent finds the elements of independence he requires within an harmonious family. The adolescents in their study admitted to maintaining good relations with parents, which favoured independence. Although anxiety is an integral part of normal adolescent experience, it is not an obstacle to acquiring a real sense of independence. (Offer et al., 1981)

Adolescents have a need for aggressive defiance of openly stated norms of society. (Miller, 1974) Indulgence up to a point appears to make the adolescent adjustment easier by providing a permissive atmosphere which is conducive to the move toward independence. It gives the adolescent a sense of security. Overprotection or overindulgence, however, appears to cause difficulty in the adolescent's adjustment to the outside world. In such cases, the adolescent never seems to rid himself of the egocentrism of childhood and finds it extremely difficult separating from his parents. (McCandless, 1979; Conger, 1977; Horrocks, 1970; Coopersmith, 1967)

In a study in which he examined the relation between autocratic, democratic and permissive practices, Glen Elder (1963) hypothesized that autonomy would be most common among children of parents who were more permissive and less autocratic and who frequently explained their reasons for rules of conduct and expectation. Conger (1977), however, found that neither authoritarian discipline nor permissiveness promoted the development of independence, creativity, self-assertion and decisiveness in adolescents. Only firmness that recognized and respected the adolescent's need to make his own decisions, openly discuss matters affecting him, assert himself, assume responsibilities and grow made a positive contribution to acquisition of independence. What makes this type of open relationship difficult to achieve is that parents wait too long before starting this process. They fail to realize that even young children prefer to be given options rather than solutions, choices rather than orders, and like parents to initiate honest and sincere discussion on matters affecting them.

One area in which so-called adolescent rebellion seems to be minimal is in the area of mate selection. (Adams, 1968) Miller (1974) observed that one way in which adolescents develop autonomy and assert their separate identity is by keeping sexual intimacy a secret from parents.

Modal Behaviour 24

> Although highly differentiated from earlier childhood dependence, there are still many needs throughout adolescence which must be fulfilled through appropriate interaction with the parents and the family if trauma or maladjustment is to be avoided. (Miller, 1974; Conger, 1973; Hurlock, 1980; Forslund and Hull, 1972; Gordon, 1972; Gold and Douvan, 1969; Berkowitz and Friedman, 1967; Eisenberg, 1962; Jersild, 1963; Landis, 1954)

Variances

i) Sex

Forslund and Hull (1972) studied 5,672 sixth-grade boys and girls and found that boys identify strongly with masculine role models and that girls tended to identify more with young boy and female models. In this way the adolescent is fulfilling the need for sex-role identification.

Offer's Modal Adolescent Project Study (1973) found a great majority of boys reported that the nicest thing about home was the emotional comfort it afforded. Girls, also, retain emotional ties with parents through early and middle adolescence, choosing parents as confidants and accepting parental restrictions. (Douvan and Adelson, 1966)

Sex differences in family-oriented versus peer-oriented preferences were noted by Bowerman and Kinch (1959). The greatest shift from family to peer orientation takes place approximately one year earlier for girls than for boys: for girls, between Grades 6 and 7; for boys, between Grades 7 and 8.

ii) Socio-Economic Conditions

In a study in which they tested their hypothesis about the differences in the effects upon adolescents of different socio-economic families, Berkowitz and Friedman (1967) found their hypothesis valid in that adolescents from working-class families are likely to act according to the level of help received whereas those adolescents from white-collar families show a greater respect for society's rules and regulations.

Work values of children were found to be directly related to the work values of the family in a study of 121 eleventh- and twelfth-grade boys by Kinnane and Pable (1962). Teenagers, studied by Offer (1973), agree with and in general share their parents' values which reflect middle-class standards.

As a group, the affluent bring up children to be achievement-oriented, work hard, control their aggressions, conceal their sexuality and communicate with parents. These families are more likely to be liberal in child rearing and use less physical discipline and more affection. Joint activity and togetherness are stressed by the affluent family. (McCandless and Evans, 1973)

iii) Other Important Factors and Conditions

The majority of boys studied by Offer (1973) felt in general that they were disciplined reasonably and fairly. Observations by Landis (1954) indicated that the democratic administrative pattern of discipline over the authoritarian form prepares an adolescent better for adult roles.

Socialization is an important aspect of an adolescent's development. Gordon (1972) concurred with Landis (1954) in noting that family contacts are important in the socialization of the adolescent.

Conger (1977) restates Eisenberg's (1965) theory that the manner in which the adolescent develops and accepts the role of an adult depends upon the parents.

In 1950, Remmers and Hacket conducted a national survey which indicated that nine-tenths of the young people polled expected their parents to help them shape their ideas of right and wrong about sex problems.

Because of the adolescent's needs for information regarding sex, parents have a responsibility for the adolescent's sexual feelings and attitudes and should maintain implicit and explicit communications with the adolescent. (Miller, 1974) Parents should be open and free in discussions on sex so they will provide the information needed in order to form healthy attitudes about sex. (Willikens, 1967)

It is important for the adolescent to have someone to confide in. In a study by Tryon (1939), it was found that the percentage of boys and girls who "talk to mother or father" was consistently greater at all ages, Grades 6 through 12, than those who "talked to a friend" when worried about something. There was an increase in percentages of those who relate to friends as the boys and girls advance in age; however, the parents were chosen over peers.

Offer et al. (1981) generally confirmed the existence of mutual confidence and respect between adolescents and parents.

> The most impressive conclusion that emerges from the family ego scale is that 18 of the 19 elements show adolescents have a very positive attitude toward their family.

However, five elements on the family ego scale indicate that adolescents in the 1970s described their family in more negative terms than those in the 1960s. The survey revealed that the adolescent of the 1970s is more apt to admit that his parents may be satisfied with him, but that he is not necessarily satisfied with them. Compared with the family of the 1960s, the family of the 1970s is less unified, and its members are a little more distant from one another. Parents in the 1970s were also considered less patient and more authoritarian than parents in the 1960s. The general conclusion that emerges from the family ego section of the Offer et al. (1981) study is that the normal adolescent feels at ease and accepted at home.

Willikens (1967) describes seven basic needs for young people:

1. the need for self-understanding;
2. the need to be understood;
3. the need for relationships with others;
4. the need to gain independence;
5. the need for sex education;
6. the need for future planning and
7. the need for a vital faith.

Modal Behaviour 25

> Within the range of normal adolescent development, some problems and conflicts between the adolescent and his family will occur that will vary according to basic personal and cultural factors. In addition to autonomy, friction may develop over home conditions, lack of communication, conflicting values, and control and authority. (Hurlock, 1980; Horrocks, 1970; Gold and Douvan, 1969; Offer, 1973; Adams, 1968; Datta, Schaeffer and Davis, 1968; Bronson, 1967; Crow and Crow, 1965; Adams, 1964; Epstein, 1963; Jersild, 1978; Herron, 1962; Kohn, 1959; Bronfenbrenner, 1970)

Variances

i) Age

Patterns of parental behaviour may vary with the age of the adolescent. Conger (1977) observes that because the adolescent is capable of principled objections, the head-on confrontations that served to strengthen authority in early years undermine authority during adolescence.

Both parents and adolescents reported that most arguments with parents took place during seventh and eighth grade. (Offer, 1973)

ii) Sex

Block (1937) found that 60 per cent of over 500 junior and senior high school boys and girls had complaints relating to parents and home. He also noted that girls indicated a larger number of complaints than boys.

A study in 1940 by Scott involving several hundred adolescents revealed that girls criticized their parents more than boys. Meissner (1965), in making an assessment of the occurrence of typical parent-child interactions in a population of 1,278 high school boys from nine schools, found that: 1) mothers were perceived by the boys as being more responsive to emotional needs than fathers -- a perception that became more dominant through the adolescent years; 2) happiness and satisfaction in the home situation was predominant; however, dissatisfaction and unhappiness increased with age; 3) most approved of their parents' guidance over them; 4) there was a tendency to be more resistant when parental restrictions were imposed in an authoritarian manner.

Girls expressed more home-centred problems than boys according to Adams (1964). Bronson (1967) discovered that girls who receive less support from the maternal model grow up lacking some characteristics associated with successful functioning and will have some developmental problems. This view is increasingly called into question by research. (Call et al., 1979) There appears to be general agreement that this generalization is primarily applicable to boys. The authors do add, however, that if adolescents are discouraged in attempts at same-sex identification, other, more serious problems may occur.

iii) Other Important Factors and Conditions

In an attempt to list the causes of conflict between parents and adolescents, some researchers (Caploue et al., 1982; Kinloch, 1970) note three or four major points of disagreement. Parents and adolescents disagree over a few problems but maintain good relations most of the time.

Table V summarizes the three main causes of conflict between parents and adolescents as observed in research conducted between 1929 and 1952.

TABLE V

THE THREE MOST COMMON CAUSES OF CONFLICT WITH PARENTS, ACCORDING TO ADOLESCENTS THEMSELVES (1929-1982)

Research	Sample	Causes of Conflict
1. Lynd and Lynd, 1929	348 boys 382 girls 10th-12th grade	1. Time I come home at night 2. Weeknights when I'm not home 3. Grades
2. Block, 1937	528 boys and girls 7th-12th grade	Boys: 1. I can't use the car 2. My grades are too low 3. I have to eat food I don't like Girls: 1. They don't want me to drive around with boys at night 2. My grades are too low 3. I have to eat food I don't like
3. Hicks and Hays, 1938	57 boys 66 girls 11-16 years	1. When I come home late 2. Fights with my brothers and sisters 3. Teasing my brothers and sisters
4. Statt, 1940	1,878 boys and girls	1. Coming home late 2. Disobedience 3. Sassing
5. Punke, 1943	989 boys 1,721 girls High school	1. Social life and friends 2. Work and spending money 3. Clothes

TABLE V (continued)

Research	Sample	Causes of Conflict
6. Landis, 1954	1,900 boys 2,400 girls 12th grade	1. My share of work around the house 2. Spending money 3. My attitude toward my parents
7. Remmers, 1957	1,500 boys and girls High school	1. Fear of admitting my errors to my parents 2. Parents are too strict about letting me go out at night 3. Too strict about car
8. Douvan and Adelson, 1966	1,925 girls 6th-12th grade	1. Clothes 2. Friends 3. Driving the car
9. Offer, 1969	73 boys 9th grade	1. Order 2. Finishing what I start 3. Cleanliness
10. Schvaneveldt, 1973	85 boys 145 girls 12-15 years	1. Chores 2. Use of time 3. Attitude toward studying
11. Johnstone, 1975	1,261 boys and girls 13-20 years	1. Studying 2. Use of time 3. School
12. Cromer, 1978	80 boys and girls 15-21 years	1. People I go out with 2. Places I go 3. My appearance

TABLE V (continued)

Research	Sample	Causes of Conflict
13. Rosenthal, 1982	630 boys and girls 13-16 years	1. Drinking and smoking 2. How often and when I go out 3. Chores
14. Caplow et al., 1982	442 boys 488 girls 10th and 12th grade	Boys: 1. Time I come home at night 2. Chores 3. Spending money Girls: 1. Chores 2. Time I come home at night 3. Number of times a week I go out

Source: Adapted from R. Montemayor, "Parents and Adolescents in Conflict: All Families Some of the Time and Most Families All of the Time", in Journal of Early Adolescence 3, 83-103, 1983.

2. Peers

Modal Behaviour 26

> Studies have shown that there is an overlap in the values of parents and peer groups, and because of this the adolescent will often retain the moral and social values of his parents. (Conger, 1977; McCandless and Evans, 1973; Mussen, Conger and Kagan, 1969)

Variances

i) Age

From investigations of seventh-, ninth- and twelfth-grade boys and girls, Conger (1977) found that adolescents with high parent-adolescent affect were significantly less likely than those with low affect to see a need to differentiate between the influence of their parents and their best friends.

ii) Sex

In his study on adolescent boys ages 12 to 14, Offer (1973) found that while establishing their independence, adolescent boys would retain much of the parents' value systems.

iii) Socio-Economic Conditions

The adolescent's like or dislike of popular music (rock and roll) was found to be dependent on the level of the mother's education. (Franklin et al., The Purdue Opinion Panel, Poll 55, 1959) The higher the level of the mother's education, the less likely the adolescent was to like pop music.

iv) Other Important Factors and Conditions

The overlap in values of parents and peer groups is due to common factors in their background (e.g., socio-economic, religious, educational, geographic). (Conger, 1977; McCandless and Evans, 1973; Mussen, Conger and Kagan, 1969)

According to Offer et al. (1981), parents tend to place too much importance on peer influence on the values of their children. Delinquency, for example, is often attributed to peer influence by parents who have difficulty accepting their own child's responsibility and, therefore, their own role in the causes of their child's behaviour.

What must be remembered, Offer and Offer (1975) point out, is the continuity of values between parents and children. Peers' values do have an influence on behaviour, but this influence is usually offset by family values more strongly entrenched since childhood. These authors add that a young adolescent feels more at ease in the company of friends who share values similar to his own.

Conger (1977, cited by Coleman, 1980) lists five things educators, parents and teachers must remember about the so-called "peer-parent" rivalry.

a) There is usually considerable overlap in the values of parents and friends.

b) Parents are uncertain in some areas and tend to listen to what the younger generation thinks.

c) It would be a mistake to think that the values of parents and peers overlap in all areas. On some points, parents' opinions seem to be the most acceptable, while on other problems, the adolescent shares the views of peers.

d) Many studies show that in situations where there is a lack of parental interest or support, the adolescent relies more on peers. The role of peers in this case is to fill a void.

e) It is not easy for adolescents to avoid the pressures placed on them by either parents or peers. The need to bend to pressures can vary between individuals. More important than age, the factors of personality, maturity and family relations determine the relationships the adolescent maintains with parents and peers. (Coleman, 1980)

Modal Behaviour 27

A strong need to be a part of a peer group develops early in adolescence. Stimulated largely by a lack of confidence and need for reassurance outside the home, it heightens the need to conform to peer group standards and becomes an important factor in the maintenance of emotional security, development of social attitudes and behaviour, and definition of identity. The influence of the peer group, however, can intensify adverse emotional development and may serve as a powerful influence of development of maladaptive behaviour. (Lerner and Spanier, 1980; Conger, 1977; Hurlock, 1980; Mussen, Conger and Kagan, 1974; Campbell, 1964; Elder, 1961; Bowerman, 1959; Polansky, 1950; Blos, 1941)

Variances

i) Age

The need to conform to the peer group is felt greatest by the young adolescent and tends to decline through middle and late adolescence. (Conger, 1977; Hurlock, 1980; Landsbaum and Willis, 1971; Mussen, Conger and Kagan, 1974; Costanzo, 1966)

ii) Sex

In his study of adolescent boys, Offer (1973) found that boys conform to each other in their behaviour, values, dress, recreation, and consumer consumption. However, in other studies, it was found that girls were more likely to conform in behaviour to peer groups than boys. (McCandless and Evans, 1973; Iscoe, 1963)

iii) Socio-Economic Conditions

Iacovetti (1973) found that lower-class boys had more involvement with peers than middle- or upper-class boys in the areas of frequency, dependency, and autonomy of interaction.

iv) Other Important Factors and Conditions

There is a major difference of opinion on the concept of a youth subculture. Many researchers and writers on adolescence refer to a youth subculture as a reality.

Sebald (1968) discusses in detail the question of whether or not there is a teenage subculture. For the affirmative, he cites six authors: James S. Coleman (1961), Albert K. Cohen (1955), Kingsley Davis (1944), Talcott Parson (1942), R.M. Williams, Jr. (1960) and Arnold W. Green (1968). That there is a subculture seems to be based on two major assumptions: 1) during adolescence the youth is in a state of "storm and stress" due largely to the social conditions around him concerning his future, identity, conflicts with his parents, and sexual frustrations; 2) there is a youth subculture; adolescents create the subculture to ease the social tensions of the adult world and to help in the transition from childhood to adult.

From their early 1950's study of Montreal teenagers, Elkin and Westley (1955) take the negative view on youth subcultures. They conclude that adolescents are more integrated in adult culture than is generally believed. Their study, however, consisted of interviews with 20 adolescents and their parents and life history material on 20 other adolescents. The generalization they made, on Canadian youth, is therefore considered to be weak.

In extended discussion on the youth subcultures, Sebald (1968) placed it in the middle socio-economic stratum. Characteristically, subculture-oriented youth are known by their independence from adult standards, conformity to the numerous peer-group fads, specific jargon and "participation in irresponsible hedonistic activities". When speaking of the lower socio-economic stratum, subculture often refers to delinquent behaviour. In the higher class levels, adolescents are more likely to be integrated into family and community.

McCandless and Evans (1973) see the youth culture as pertaining to the adolescent years. The culture has its own mode of dress, language, style of dance, and music. Oddly enough, the image these qualities project may be, and often is, adopted by the adult culture. All of these differences add up to a collective effort by the adolescent group to create an identity for themselves apart from the adult world within this youth culture. Reacting to the Kandel et al. study (1970) on youth subculture, McCandless and Evans (1973) concluded that instead of just one, there are many subcultures which range in effect from moral and religious beliefs to fads.

McCandless and Evans (1973) make a final reference to the "counter-culture" movement which seems to be a growing phenomenon in North America. Briefly, the movement consists of a rejection of the North American way of life, characterized by intellectual reasoning, self-reliance, personal responsibility, deferred gratification, and advance planning. There is a perceptible move toward a Dionysian lifestyle with its immediate sensory experience, cultivation of deep inter-personal relationships, and a "back-to-nature" calling.

The Purdue Opinion Poll No. 55 (1959) indicates that not all adolescents recognize the peer group as being a good influence. They find fault with it in the non-thinking group behaviour, unfairness to non-members, and the promotion of bad habits in individuals.

Other studies have shown that a child who is a product of parental disregard and neglect becomes more peer-oriented. (Conger, 1973: McCandless and Evans, 1973; Medinnus and Johnson, 1969; Mussen, Conger and Kagan, 1969)

The peer group does influence the adolescent's use of alcohol and drugs. Brotman (1966) points out that there is a strong pressure for the adolescent to at least experiment with drugs such as LSD and marijuana. In their study, however, Eisenthal and Udin (1972) claim that it is the indirect pressure of the group norm and the leader's behaviour which serves as the greatest influence and not the social pressure of the group itself.

Recent studies reveal that pressure to use drugs often occurs in preadolescence, but most often between 12 and 14 years of age.

Modal Behaviour 28

> The adolescent often becomes part of two basic peer groups formed on the basis of social and ethnic background, common interests, and maturity: the clique and the crowd. While the clique is relatively smaller and offers a more intimate setting, the crowd offers a larger social atmosphere and is primarily responsible for the change from the unisex climates of early adolescence to the heterosexual cliques of late adolescence. (Coleman, 1980; Hurlock, 1980; Conger, 1977; Dunphy, 1963)

Variances

i) Sex

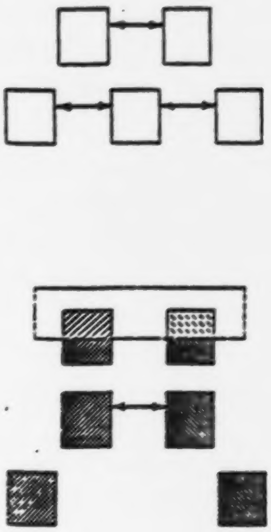
Taking into consideration several other studies (Maccoby, 1966; Coleman, 1961; Phelps and Horrocks, 1958; Keedy, 1956), Conger (1977) concludes that girls' cliques tend to be closer, more exclusive, more impregnable to outsiders and more enduring while boys' cliques tend to be more democratic and flexible due to their emphasis on overall sociability and athletic skills. (Coleman, 1961) This final point has been confirmed in a study by Eitzen (1975).

ii) Socio-Economic Conditions

According to Conger (1977), social and economic status is an important determinant for membership in crowds or cliques.

These two types of groups are not opposites but instead fill different functions. The clique is characterized by conversation and communication, while the crowd is involved more in organized social activities. (Coleman, 1980) The most distinctive aspect of the crowd is that it offers the adolescent a transition between unisex social activities and heterosexual social activities. (Dunphy, 1963) Figure 9 illustrates this development.

LATE
ADOLESCENCE



Stage 5: Start of disintegration of the crowd. Fairly stable couples.

Stage 4: Well-organized crowd. Heterosexual cliques that get along well together together.

Stage 3: Crowd is becoming structured. Unisex cliques join to form a heterosexual clique.

Stage 2: Start of the crowd. Group interaction of unisex cliques.

Stage 1: Pre-crowd stage. Isolated unisex cliques.

EARLY
ADOLESCENCE

Figure 9. Development Stages of Adolescent Groups, according to Dunphy (1963), cited by Coleman (1980) in "Friendship and the Peer Group in Adolescence"

☐ Boys and Girls

▒ Girls

▨ Boys

There is also a third type of group, the gang. Adolescents who identify with neither the clique nor the crowd and find no satisfaction in participating in organized activities tend to join a gang. In principle, the gang brings together people of the same sex and one of its functions is to compensate for the social rejection these people feel by resorting to anti-social activities. (Hurlock, 1980)

Modal Behaviour 29

> Dating helps the adolescent to develop social and interpersonal skills with the opposite sex as well as to develop a sense of identity and sexual awareness. (Conger, 1977) Likewise, interest in the opposite sex increases with maturity and changes from a purely social need for interaction to one of enjoying being with a certain individual. (Offer, 1973)

Variances

i) Age

Conger (1977) points out that dating causes much anxiety for the early adolescent. The adolescent will place emphasis on developing a dating personality rather than interacting with the opposite-sex peer. In later adolescence, however, the emphasis is on developing a meaningful relationship. A consensus of several different studies situates the average age to begin dating at 14 to 15 years for girls and 15 to 16 years for boys. (Hurlock, 1980; Conger, 1977; Gold and Douvan, 1969; Douvan and Adelson, 1966; Lowrie, 1951). More than half of all tenth-, eleventh- and twelfth-grade students date at least once a week. (Dickenson, 1975)

ii) Sex

In Offer's (1973) study, 77 per cent of the boys were dating by eleventh grade, however, most of them dated irregularly and thought dating unimportant. According to Conger (1973), boys are more concerned with shared activities and interests than with emotional and intimate aspects of heterosexual relationships. Biehler (1974) found that girls tend to date older boys who are at the same maturational level. Santrock (1981) found that in the previous 10 years, dating among adolescents has been increasingly characterized by the need for experimenting with sexual intimacy.

iii) Socio-Economic Conditions

Boys and girls seldom date outside their own social class, and then only with members of the adjoining class. (Conger, 1977)

iv) Other Important Factors and Conditions

In seeking friends of the opposite sex, adolescents will turn to ideals formed from their own cultural group. Adolescent girls see the ideal boy as an athletic hero, while boys see the ideal girl as one who is popular with the boys. (Hurlock, 1973)

According to Forslund and Hull (1972) girls perceive their sex-role model more in relation to the opposite sex than boys do. Boys identify strongly with both the primary masculine role models of peers, siblings, and fathers, and the secondary role models such as male entertainers and athletes. Girls tend to identify with female and male role models in primary relationships, and more with male entertainers and male historical figures in secondary relationships.

Modal Behaviour 30

> Friendships become very intense during adolescence. (Conger, 1977; Biehler, 1974) The number of friendships becomes a direct measure of the adolescent's popularity, acceptance, and approval by his peers. (Hurlock, 1973; Coleman, 1961) Adolescents choose friends who share personal and social characteristics and interests. (Conger, 1977; Byrne and Griffith, 1966; Douvan and Adelson, 1966; Brown, 1954)

Variances

i) Age

The early adolescent wants a friend whose interests, values, and background are similar to his -- primarily, someone with whom to share activities. (Hurlock, 1973, 1980; Duck, 1975; Conger, 1973; Douvan and Adelson, 1966; Douvan and Gold, 1966) During middle adolescence the emphasis is on the quality of friendship and the adolescent looks for a friend at this time. (Conger, 1973; Douvan and Adelson, 1966; Osterrieth, 1969) As the late adolescent becomes more secure in his own identity and in the development of psychological defences, his dependence on close friends lessens and he becomes more tolerant and appreciative of differences in friends. (Conger, 1973; Douvan and Adelson, 1966; Douvan and Gold, 1966) Hurlock (1973) also sees this as a time when the adolescent will seek friends who can help him adjust to members of the opposite sex. Sensitivity toward the feelings of others appears later in adolescence. (Duck, 1975)

ii) Sex

Girls tend to form more deep, frequent, and dependent friendships while boys tend to choose friends on the basis of common interests and activities shared. (Conger, 1973; Douvan and Adelson, 1966)

iii) Socio-Economic Conditions

The culture of the community determines the right kind of friends to have. Thus, rich and socially prominent friends are important in a community that places importance on wealth and social prominence. (Hurlock, 1980)

iv) Other Important Factors and Conditions

Today's youth place a great emphasis on true and lasting friendships. In two surveys (Harris, 1971; Yankelovich, 1969), nine out of ten adolescents agreed on the importance of more true friendships between people, but only one out of five thought that people could be depended on.

Also, in a study done by Katz in 1968, it was found that 23 to 34 per cent of the men and 12 to 18 per cent of the women in the study had not had a meaningful friendship with a member of the same sex; and 37 to 50 per cent of the men and 23 per cent of the women had not formed such friendships with a member of the opposite sex by the time they were students in college. Thus, we see a paradox between ideals and actual practice. Conger (1973) offers three possible explanations. First, friendships may be hard to come by due to the stress of our social culture; second, adolescents may be putting more demanding standards on friendships; and finally, it is more difficult for adolescents to put their ideals into practice than they anticipated.

3. School

Increasingly, young adolescents, the specific subjects of this study, attend what are known as intermediate schools ("first stream secondary" in Quebec, junior high in several Canadian provinces, and middle school in the United States). This arrangement has both proponents and opponents but currently seems to enjoy the favour of school board officials, since it is being introduced throughout North America.

Theodore Moss (1969) in Middle School saw this new structure as being designed specifically to meet the needs of preadolescents. In other words, to be relevant, it should foster:

1. The individual physical well-being of each student: health and physical education activities must be designed to accommodate this period of rapid growth and dramatic bodily change;

2. Individual mental health through programs that take into account each student's need to grow;

3. Learning geared to students' maturity, in an atmosphere that challenges, but does not pressure the individual;

4. A continuous program of educational guidance: middle school teachers should be guidance oriented, working with specialists as a team;

5. A program that is continuous through twelfth grade;

6. Activities that are related to the interests and needs of middle school students; recreational activities are a natural outgrowth of classroom activities.

Curtis (1972) states the primary functions of the middle school curriculum as follows:

1. Development of cultural transition from childhood to later adolescence;

2. Establishment of an educational transition from elementary to secondary school educational philosophies;

3. Recognition of and respect for the extreme variabilities within and among adolescent groups.

Curtis (1972) sees the intermediate school as transitional and primarily concerned with finding the most appropriate program to cope with the personal and educational development of early adolescents.

Educators have been motivated by three forces to redefine the functions of the middle school. (Eickhorn, 1973) They are: 1) the growing knowledge of characteristics of early adolescents; 2) changes in culture (population shifts, mobility, racial equality, transportation and community development, development of technology); and 3) existing middle schools have become rigid and institutionalized.

According to most advocates of the intermediate school organization, such a structure will facilitate the implementation of educational programs that are relevant to emerging adolescence, i.e., that give each child opportunities for increasing self-identity, for comprehension of his environment, and for attaining his or her full potential in understanding and skills. In a document entitled Ontario Intermediate and High Schools (1983), the Ontario Ministry of Education defined the directions, goals and possibilities for adolescent education. This document is based on the strongest principles of psychology and pedagogy.

Modal Behaviour 31

> The adolescent turns to the school for help in fulfilling certain fundamental needs in life. The school is uniquely suited to help adolescents develop a realistic comprehension of the world around them, increase their abilities to think and communicate effectively, and assume responsibility for their lives. Further, it should stimulate a desire to continue learning, essential to the attainment of full self-actualization. The particular expression of such needs and emphases may change from generation to generation and when they do, the school must be prepared to

change also. (Bush-Rosinagel and Vance, 1982; Conger, 1977; McCandless, 1979; Adams, 1968; Jersild et al., 1980)

i) Socio-Economic Conditions

McCandless (1970) contends that the adolescent period is one in which compensation for intellectual, emotional, and behavioural retardation can be provided for 70 to 85 per cent of cases who receive a massive compensatory training program between 13 and 16 years of age.

Leidy and Starry (1967) in comparing the findings of a nationwide survey of adolescents conducted by the Purdue Opinion Panel found that most students favour a student government with some say as to school operation, but they do not support the idea of student government having discipline power over students.

ii) Other Important Factors and Conditions

According to the findings of Task Force III of the Joint Commission on Mental Health of Children (1973), the school has moved from a peripheral position to a central one for today's youth in that it has become a major bridge for the adolescent into a place in society. Twenty years ago there were other avenues to employability for the child who failed in school. The Commission concluded that today, education seems to be the only road to preparation for work. In order for each youth to be able to read, write, figure, and know his culture well, it seems advisable for all youth to remain in school until age 16 or older. (McCandless and Evans, 1973)

The adolescent needs guidance and help at school. A good school recognizes an adolescent's need for independence and his striving for emancipation. By careful planning, it will allow the adolescent opportunities and means to work toward an independent status, encouraging him to assume responsibilities, make decisions and plan for the future. (Horrocks, 1969)

Schools must provide a learning atmosphere that promotes self-confidence, self-respect and a sense of cultural identity. (Conger and Kagan, 1974) This was demonstrated by the authoritative study conducted by Goodlad (1983) on a huge sample of American schools; the summary of this survey was published in A Place Called School (1983). Goodlad feels it is neither the curriculum nor the methodology that determines the quality of education a school provides, but instead the atmosphere in the school and classroom, and interpersonal relations that are characterized by confidence, enthusiasm, affection, receptiveness and a sincere show of interest in the knowledge acquired by students.

One of the major obligations of the school is to facilitate the adolescent's social and psychological growth. (Forslund and Hull, 1972; Gordon, 1972) Ramunas (1972) explained that the complete school is the one which provides students with an environment for learning that meets their needs for physical, intellectual, social and religious growth and development. Any school that neglects or eliminates one or more of these four areas, Ramunas argues, deprives the student of the environment required for full development of his personality.

Another task of the school is to help the child toward happiness, self-acceptance, realistic self-esteem and pride in himself. (McCandless, 1970)

Adolescents, according to the Report of Poll No. 93 of the Purdue Opinion Panel (1972) felt that they were working at satisfactory levels in reading comprehension, reading speed, writing, speaking, physical, mathematical, and mechanical problem solving, social sciences, vocational employment, and home-family management. (Erlick, 1972)

Davis (1972) found that many educators and psychologists believe that today's youth have different needs from the children of the past. Children are reaching adolescence at an earlier age because of earlier social, physical and emotional maturity.

Since his sexual development constitutes one of the adolescent's major concerns and is often a source of extreme anxiety, the school cannot ignore the profound needs this maturation creates. A brief discussion of sex education in school is therefore required here.

Some circles argue that parents are responsible for providing their children with as much sex education as possible. However, Adams (1968) and Staton (1963) believe that the school can handle some responsibility and promote better understanding of the anatomy, physiology, chemistry, biology and psychology of sex. The sharing of respective responsibilities is subject to controversy.

Most adolescents would like to see a more open and honest attitude toward sexuality. (Harris, 1971; Simon and Gagnon, 1970; Yankelovich, 1969) Of a large sample of middle-class 13- to 19-year-olds, 98 per cent would like to receive complete sex education at school. They are interested not only in biological information and sexual techniques, but also in information on the meaning of sexuality and love. (Hunt, 1974) Although sex education in intermediate schools is less subject to controversy than in elementary schools (kindergarten to Grade 6), its benefits are sometimes questionable. For example, Glossop (1982) states, "the best organized and most innovative sex education campaign would reduce the annual rate of teen pregnancies by barely 10 per cent". In Canada, 1,013 girls between 10 and 14 years of age became pregnant in 1976. The sharpest rise in pregnancies in recent years has occurred in this age group.

The importance and value of sex education programs cannot be discounted, but a clear distinction must be made between the cognitive dimension of the physiology of reproductive functions and the formative dimension that consists of learning the relationship between the integrity of one's own body and that of others.

It must also be remembered that:

> The most far-reaching and undoubtedly the most influential sex education is a continuous process that takes place outside our schools, in a sexually saturated society. We must not underestimate the influence of messages that are often non-verbal and indirect. A child takes his cues from all types of minor, daily incidents that make up the sexual climate in the home.
>
> All of this starts in infancy with diapers and the acquisition of hygiene habits, and continues with adoption of the family style of expressing or repressing affection through physical contact. Standards of intimacy, modes of dress and undress, reactions to sexually explicit advertising and other elements are all part of the picture.
>
> In the final analysis, these indirect messages may exert a greater influence than the presence or absence of direct verbal communication on sexuality. Outside the home, sex education continues unabated in the mass media, peer groups, and society in general, which has increasingly come to equate sexual success with social success. (Glossop, 1981)

Modal Behaviour 32

There are a number of situational factors in the school environment which have an effect on the quality of the social and psychological development of the adolescent and his educational attainment. Principal among them are teachers, peers, influence of parents, size and organization of the school. (Mussen, Conger and Kagan, 1974; Tec, 1973; Erlick, 1973; Bachman, 1972; Horrocks, 1969)

Variances

i) Sex

There are wide variations in the effects of cliques on students differing in ability and sex. (Anderson, 1970) Cliques seem to aid low-ability females while the below-average ability males use cliques to escape their responsibilities to school and substitute them with peer group non-learning norms. Classroom intimacy is positively related for high-ability girls and has a negative effect on learning for girls with low ability. (Anderson, 1970)

ii) Socio-Economic Conditions

Socio-economic status of a child's family is significantly related to his level of educational aspiration and to school achievement. Children of high socio-economic status aspire to higher educational levels than lower-middle and lower class peers. (Mussen, Conger and Kagan, 1974; Bachman, 1972; Berman and Eisenberg, 1971; Bachman, 1970)

Necham Tec (1973), in a social survey of 1,704 teenage boys and girls conducted in a well-to-do suburban community on parental educational pressure and its effects on conformity, concluded that the stronger the parental pressure, the less the likelihood of educational conformity. The evidence varied in one indicator, that of acceptance of the school as a vehicle for advancement.

A survey of adolescents' opinions using the Purdue Opinion Panel, Poll No. 95 (1972) revealed that 36 per cent of students polled thought teachers treated them as responsible individuals; 36 per cent thought "most" teachers were willing to listen to their opinions; 34 per cent felt "most" teachers encouraged students to do their best; 27 per cent felt "some" teachers offered to help develop effective study and work habits; 32 per cent of the students felt "some" teachers really understand students their age; and 42 per cent found it "sometimes" easy to talk with their teachers. (Erlick et al., 1973)

Evidence that students in small high schools score lower on achievement tests was observed by Flanagan (1962), Wattenberg (1973) and Bledsoe (1959).

In a series of research studies measuring classroom climate and individual learning, Walberg and Anderson (1968) found that some groups of climate variables predicted learning better than others. Among these were isomorphism (the tendency for class members to be treated equally), organization (efficient direction of activity), and synergism (personal relations among class members).

A study conducted by Anderson (1970) suggests the classroom social climate has a major influence on learning and that there are wide differences in these effects for students differing in ability and sex.

Goodlad (1982) considers school and classroom climate a decisive factor in student achievement.

Cusick (1973) speaks of the class as "series of dyads, triads, cliques, and groups". These groups provide the individual members with ways in which to participate, interact, and gain recognition. (Cusick, 1973; McCandless, 1970) In the Report of Poll No. 93 of the Purdue Opinion Panel (1972), 48 per cent of the students polled said that classroom exercises were most important in learning school work. Cole and Hall (1970) discern that social environment in the classroom results in character development of adolescents.

Adolescents appear to be looking to faculty for guidance and direction. In the Report of Poll No. 88 of the Purdue Opinion Panel (1970), 14 per cent of students polled reported the staff as rejecting, 10 per cent reported the staff as supporting, 76 per cent reported the staff in the middle of supporting-rejecting ends of a continuum, and 50 per cent saw teachers as friendly and sympathetic. (Erlick, 1970)

In 1973, Offer stated that "adolescents believe that few teachers treat them as individuals". The Purdue Opinion Panel, Poll No. 88, Item 9 (1970) reported that 42 per cent of students polled felt "most" teachers treat students as responsible individuals. (Erlick, 1970)

Modal Behaviour 33

> The nature of the school and the nature of the adolescent both contribute to the creation of problems in the educative process during adolescence. (Gordon, 1972; Erlick, 1970; Offer, 1973).

According to the Purdue Opinion Panel, Poll No. 95, Item No. 19 (1972), 61 per cent of all students polled selected "never" to thinking about dropping out of school. (Erlick, 1972) In the area of behaviour, 42 per cent of adolescents worry "not very much" about "being tempted to cheat in school, sometimes lying without meaning to, lacking self-control, getting into trouble, deliberately hurting people's feelings, etc." Several responses indicated the need for group counselling in areas of values (42 per cent), behaviour (36 per cent), and getting along with parents (43 per cent). (Erlick, 1972)

The school should identify and meet the needs of those children who are potential "drop-outs". It is suggested that eventual drop-outs in general are physically unattractive, poorly groomed, lack social know-how, are shy, withdrawn and unhappy. Many who drop out of school may be escaping from intolerable social situations. (Kuhlen and Collister, 1952) In 1965, Mead deplored that "millions of present day adolescents are condemned by social circumstances to learn very little at school and to live a life in which their potentialities are never realized".

Adolescents drop out of high school for many reasons. Mussen, Conger and Kagan (1974) argue that schools are failing to meet the personal, social and occupational needs of youth, especially in the cities.

Bachman, Green and Wirtanen (1971) note that the reasons most often given for dropping out involve either the nature of school work, or overly authoritarian supervisors. Other reasons include lack of freedom and the need to earn money to gain financial independence. (Bachman et al., 1971)

The same authors found in general that drop-outs suffer from a poorer self-concept than those who stay in school. In other words, personal factors intervene in the adolescent's decision to drop out. These same factors can generate habits of truancy, delinquency, vandalism, and alcohol and drug abuse, all of which lead to rather than result from dropping out.

In a study by Jones (1977), school and social misfits were not the only drop-outs. The author argued that 22 per cent of students currently enrolled in fifth grade will eventually drop out for reasons other than mental or physical handicaps.

Finally, in a study of the subject, Mackey (1977) points out three aspects in the life of drop-outs that must be understood: (a) feelings of inadequacy in skills and abilities considered necessary to succeed; (b) rejection of customs and laws of social behaviour as conditions for success; (c) alienation from society. For the drop-out, school is simply a dehumanizing environment that holds absolute control over his youth.

The vast majority of students admit that school poses a serious problem for them. (Adams, 1964) They have a real need for counselling not only for career but also for personal problems. Many adolescents have difficulty voicing their feelings on the latter. (Erlick, 1970)

Modal Behaviour 34

> Adolescents express a variety of attitudes toward school. (Erlick, 1972; Sprinthall and Mosher, 1970; Leidy and Starry, 1969; Remmers and Radler, 1956)

Variances

i) Socio-Economic Conditions

Sprinthall and Mosher (1970) in an investigation of perceptions, attitudes and motives toward schools in which they studied a random sample of 60 eleventh-graders from each of three schools of different socio-economic backgrounds, indicated that the major differences in attitudes, perceptions, motives and decision-making styles were due to school differences. Urban school pupils viewed learning as a passive obedience to teacher directives. Suburban pupils exhibited the strongest extrinsic motivation toward studying, especially among boys. The suburban pupils tended to rely on directions from others.

ii) Other Important Factors and Conditions

School is a constant concern of youth. Between the years 1953-1967 in answer to the question of how they felt about school, two to three per cent consistently said they disliked school while 43 per cent in 1953, 46 per cent in 1958, 51 per cent in 1965, and 57 per cent in 1967 claimed they moderately liked it most of the time. (Leidy and Starry, 1969) According to the Purdue Opinion Panel, Poll No. 95, a general conclusion was that most high school students have positive attitudes about the value of education. Sixty-six per cent of students felt school is important because knowing a lot is important and 62 per cent felt it not only had practical value but that learning itself was worthwhile. Of the students polled, 69 per cent would choose to stay in school even if a good job were offered. (Erlick, 1972)

Remmers and Radler (1956) report that 58 per cent of the total sample of high school students questioned agree that high school gives them the training they need.

CONCLUSION

This third section has presented a wide array of information on the normal expectations for emotional and social development of adolescents. Thirty-four modal behaviours have been identified and documented with evidence of the behaviour's existence in the middle-class culture with important variations for age, sex, or cultural differences accounted for. The normal expectations, so identified, reveal the following characteristic behaviour in the emotional and social development, respectively.

Emotional Characteristics

1. Emotional maturity is expected to increase with age, but its pace is conditioned by a number of factors inherent in the individual himself and the cultural milieu.

2. As he matures, the adolescent is increasingly aware that emotional maturity is more than the simple control of one's overt display of emotion.

3. Adolescents who deviate markedly from the norm in the timing and rate of sexual maturing are those most likely to experience heightened emotionality.

4. Causes of heightened emotionality in adolescence are multiple and will include, in addition to the rapid and marked physical changes accompanying the development of sexual maturity, such other factors as social change, physical health and nutrition.

5. The style of coping with crises in adolescence is not unlike that for other periods in life. Typically, the average adolescent will meet crises in this period in a manner that will increase his emotional stability. Crises serve to stabilize rather than threaten personality development.

6. Anger outbursts are common during early adolescence but in general reduce with age and become more controllable.

7. The characteristic response to anger in early adolescence is to leave the scene.

8. The most frequent cause of anger in adolescence is found in social relationships.

9. For early adolescents, particularly ages 12 and 13, the verbal retort supplants physical violence as a common expression of anger.

10. The early adolescent's perception and interpretation of violent aggressive acts is related to differences in personal life patterns.

11. The type of fear will vary according to age, sex, and socio-economic conditions. Individual differences within categories will occur as well, depending on what is important in the unique lifestyle of the individual.

12. The dominant fears of adolescents are related to social situations and represent a significant change from childhood fears.

13. A main source of anxiety and worry for adolescents at all ages, from 12 to 16, is the school.

14. Anxiety is more likely to occur in an adolescent if the individual feels that he is unable to meet cultural expectations.

15. The shock of puberty is a source of increased anxiety at the beginning of adolescence. It may be anticipated that the adolescent will spend much time in deep thought, usually secretive, about the changes both physical and emotional, that are taking place at the moment. Normally, outbursts of anxiety will begin to subside in about two or three years as the adolescent becomes accustomed to the new aspects of self.

16. Marked changes in cognitive ability contribute to an increased potential for anxiety and worry for early adolescents. When the adolescent is capable of carrying out formal operations in his thinking, he is no longer confined to perceived realities and can formulate hypotheses which may serve to stimulate a vivid imagination.

17. On the whole, most adolescents in the age range 12 to 16 are happy and experience much. joy.

18. Affection for others becomes more intense during adolescence. This affection is usually focused on peers, adults outside the home and occasionally family pets. The adolescent is more tolerant and loyal to a person towards whom he is affectionate than for someone else, however, he will refrain from open displays of affection (e.g., kissing) for fear of ridicule, social disapproval or rejection.

19. A major task of adolescence is the re-evaluation and redefinition of the self-concept. The advent of puberty and the shift in society's attitude toward the individual force major changes in the concept of self; thus, the adolescent typically begins assessing himself from several perspectives, with particular emphasis on the real and the idealized self.

20. The individual during adolescence becomes especially observant of his intellectual competence, physical attractiveness, physical skills, social attractiveness, sex identification, leadership and moral qualities and sense of humour as they unfold.

21. Self-esteem plays a major role in the development of a positive self-concept in adolescence. It is a product of the value the individual places on the complex of views he has of himself -- whether approving or disapproving; accepting or rejecting.

22. A new kind of egocentrism begins to unfold in adolescence. It is an egocentrism which is clearly distinguished from the egocentrism of earlier childhood largely in terms of the increased ability to conceptualize thought, both of self and of others. As he becomes capable of formal operations and can consider hypothetical possibilities, the early adolescent characteristically believes that others are as preoccupied with his appearance and behaviour as he is.

Social Characteristics

23. Autonomy becomes a major developmental need during adolescence. Normally the move toward autonomy proceeds with minimal conflict and struggle within the family, but some antagonism is to be expected. Parents typically are understanding and supportive of the adolescent's needs to become independent and self-sufficient.

24. Although highly differentiated from earlier childhood dependence, there are still many needs throughout adolescence which must be fulfilled through appropriate interaction with the parents and the family if trauma or maladjustment is to be avoided.

25. Within the range of normal adolescent development, some problems and conflicts between the adolescent and his family will occur and will vary according to basic personal and cultural factors. In addition to autonomy, friction may develop over home conditions, lack of communication, conflicting values, and control and authority.

26. Studies have shown that there is an overlap in the values of parents and peer groups, and because of this the adolescent will often retain the moral and social values and beliefs of his parents.

27. A strong need to be part of a peer group develops early in adolescence. Stimulated largely by a lack of confidence and need for reassurance outside the home, it heightens the need to conform to peer group standards and becomes an important factor in the maintenance of emotional security, development of social attitudes and behaviour, and definition of identity.

28. The adolescent often becomes part of two basic peer groups formed on the basis of social and ethnic background, common interests and maturity: the clique and the crowd.

29. Dating helps the adolescent to develop social and interpersonal skills with the opposite sex as well as to develop a sense of identity and sexual awareness. Likewise, interest in

the opposite sex increases with maturity and changes from a purely social need for interaction to one of enjoying being with a certain individual.

30. Friendships become very intense during adolescence. The number of friendships becomes a direct measure of the adolescent's popularity, and acceptance and approval by his peers. Adolescents choose friends who share in personal and social characteristics and interests.

31. The adolescent turns to the school for help in fulfilling certain fundamental needs in life but all too frequently is disappointed.

32. There are a number of situational factors in the school environment which have an effect on the quality of the social and psychological development of the adolescent and his educational attainment. Principal among them are teachers, peers, influence of parents, size and organization of the school.

33. The nature of the school and the nature of the adolescent both contribute to the creation of problems in the educative process during adolescence.

34. Adolescents express a variety of attitudes toward school.

In addition to the delineation of the above characteristics, the schema used in these chapters quickly identifies behaviours for which empirical evidence is meagre or conflicting, and for which additional research is needed. Study of the following aspects of the behaviours cited in this section of the report seems imperative in light of the major developmental tasks of adolescence:

1. Causes of heightened emotionality other than physical change and careful study of differences for sex and socio-economic conditions;

2. Coping style of adolescents in meeting crises, with a specific attempt to ascertain if there are significant differences in age, sex, and socio-economic conditions;

3. The basic sources or origins of the adolescent's inordinate fear and disdain, or even dislike, of school;

4. The effect of changes in cognitive ability on the anxieties, worries and fantasies of boys and girls;

5. Sex differences in the egocentrism that occurs in adolescence;

6. The socio-economic differences in the dynamics of cliques and crowds;

7. The school drop-out rate as it pertains to factors within schools that are out of harmony with the growth needs and nature of the adolescent.

V. MORAL DEVELOPMENT DURING ADOLESCENCE

Introduction

The adolescent's moral development can be defined as the growth process during which the adolescent begins to distance himself from the cultural conditioning that initially shaped his personality. He attempts to define the values that will guide his social commitment. Mitchell (1975) considers it "one of the adolescent's major tasks to develop a code of morals that will enable him to meet the challenges and solve the problems of adult life". This task forms an integral part of the search for identity that characterizes this stage of growth. "At the heart of the search for an identity is the battle to assert certain values that will allow the individual to lead a social life." (Matteson, 1975) To attain "complete identity", a youth must take a stand on parental values, examine the possibilities and finally, choose his own values. (Marcia, 1966) It is this value determination process that will be analysed in the fifth part of this study. First, the principal theories of moral development will be inventoried. Then the conditions for moral development during adolescence will be deduced from this research. Finally, we will attempt to define the proper content of adolescent moral education.

CHAPTER 9 - THEORIES OF MORAL DEVELOPMENT

Each theory is based on a certain view of the relationships between an individual and his culture. Consideration must also be given to the culture's influence on personality formation and construction of moral life. These theories are centred around four main models: the cultural transmission model, the psychoanalytic model, the child-centred model, and the interactionist model.

1. The Cultural Transmission Model

This is the traditional education model based on "reflection on the essence of culture and the conditions of transmission". (Bloch, 1968) The dominant factor in this education is "the model concept, that is, a type of man who serves as a reference". (Faure, 1972). Working from the principle that a child alone cannot find the materials necessary for ego edification, this theory concludes that he must be given them by an adult, whose mission is to transmit the values of the culture by suggesting a model to which he must conform. "Educational methods", Fromm (1970) writes, "are significant only as transmission methods and they can only be correctly understood if we first understand what personality types are desirable and necessary in a given culture." It is therefore a reproductive system aimed at shaping the child into a copy of an adult model so that his personality, through internalization of cultural standards, takes on the patterns of this model as closely as possible. This educational undertaking is based on a pessimistic view of individual nature, which is seen as a reservoir of bad instincts that, if left to grow unchecked, will upset social life. Only by assimilating social standards can the individual socialize this nature.

In presenting the sociological view of education, Durkkeim (1968) also illustrates the relationship between social science and educational activity. He starts from the principle that every society has its own model and delegates its power to teachers so they can lead students to internalize this model:

> Education is the action carried out by adult generations on those who are not yet ready for social life. Its purpose is to generate and develop in the child a certain number of physical, intellectual and moral states demanded of him by both political society as a whole and the social environment for which he is specifically destined. (Durkkeim, 1968)

His conception of the relationships between nature and culture give absolute priority to the latter; he sees the child's nature as nothing more than a reservoir of instincts to be mastered, a tabula rasa from which culture must develop a social being:

> In each new generation, society therefore finds virtually a tabula rasa on which it must develop with renewed effort... By the fastest means available, it must add to the selfish and asocial being just born another being capable of living a moral and social life. (Durkkeim, 1968)

Finally, "the man that education must produce is not the man as nature made him but as culture wants him to be". (Durkkeim, 1968) Moral education is therefore simply the effort to transmit cultural values.

Modern theories of "social apprenticeship" adopt the same approach. They combine both the "behaviourist" theories based on the role of reinforcement in the acquisition of social and moral behaviours, and the theories based on the process of imitation and identification; moral development is the result of an effort toward increasing conformity to the rules of society. Unlike the earlier theories, these are not based on reflection on the essence of man, but instead work from an analysis of the mechanisms of cultural transmission and strive to determine the methods best suited to obtaining desired social behaviours. In his theory of "social behaviourism", Staats (1971, 1975) rejects "organico-mentalist" explanations that attribute development to unobservable psychic structures. He favours a method of intervention based on the effectiveness of reinforcement, particularly verbal stimuli, in increasing the frequency of desired behaviours. Advocates of this theory stress the importance of educational practices based on explanation; social control is thus internalized and self-reinforcement replaces outside reinforcement so the subject can control his own behaviour. (Richelle, 1971) Research on the role of imitation and identification in the acquisition of moral behaviours shows that subjects learn from each other by observation and that the practice of direct reinforcement is not always necessary. This learning without direct reinforcement is called "learning by observation" or "modelling". Bandura (1971) defines it as "the appearance of a resemblance between the behaviour of a model and that of another person under those conditions where the model's behaviour serves as a determining indicator for the resemblance of the two behaviours". For this identification process to begin, the model must be seen by the child as affectionate (gratifying emotional relations between the subject and the model provide the primary driving force); he must have the traits valued by the child and the child must see objective points of similarity between himself and his model. (Green, 1974) Learning by direct reinforcement and learning by observation in fact appear to be two complementary components of moral development: a person may actually learn some behaviours by observation but not adopt them because of insufficient appreciation. (Bandura, 1971) These theories obviously emphasize the social components of moral learning, but they do identify social and moral learning by reducing moral development to an assimilation of social standards. They therefore reinforce the traditional problem of cultural transmission.

2. The Psychoanalytical Model

The psychoanalytical model emphasises both the need and risks of cultural transmission by analysing the process through which moral and social standards are internalised. It opens our eyes to what happens within the child's psyche as he increasingly conforms to the adult model. Yet, this model also becomes part of the same problem as the preceding model by justifying the role of culture as a repressive organisation of individual instincts. In fact, Freud adopts the same pessimistic view of individual nature as that underlying the traditional model. He considers the child's first nature to be not only strange to but completely opposed to all of morality's requirements. "The child is absolutely egoistic" (1926) and altruism can be established in him only at the price of heavy constraint upon his instinctive impulses. Jones faithfully interprets this thought:

> Without the influence of education, the individual would probably remain forever a selfish, jealous, impulsive, aggressive, sordid, vain and egocentric animal, showing no concern for the needs of others, impenetrable to the complicated social and moral criteria that are the basis of civilized life. (1925)

Initially, a single principle governs a child's behaviour: the pleasure principle, which means that his behaviours are all aimed at the immediate satisfaction of his wants. This is why moral education begins with constraints. Parental denial enters into play to mediate between desire and reality and to protect the child from his own desires. Moral education therefore starts with this breaking in, through which the child learns to resist certain impulses and delay some satisfaction. He thus becomes aware of a rule:

> Under the pressure of the great teacher that is necessity, the ego's tendencies quickly replace the principle of pleasure with a change... The ego learns that it is indispensable to forego immediate satisfaction and defer the acquisition of pleasure... Educated in this way, the ego becomes "reasonable", is no longer dominated by the principle of pleasure, but conforms to the principle of reality whose essential purpose is pleasure, but pleasure that, while deferred or lessened, has the advantage of providing the certainty obtained through contact with reality and conformity to its demands. (1959, p. 336)

The child then progressively internalizes these rules until they are his own. Ideas that are first imposed from outside, the "super-ego" develops through the process of identification, which ends the "Oedipus" crisis. Parental demands, initially suffered, become internalized as the child identifies with those from whom these demands come: "Those whom we first admired and feared we have now assimilated and integrated into ourselves". (1964, p. 203) It was in this super-ego, this "introjected parental authority", that Freud saw the first form of moral consciousness. He defined moral life as "the submission of the ego to the imperative of the super-ego" (1964); moral consciousness would therefore be "the internal perception of the repudiation of certain desires we experience". (1924) The super-ego, thus identified with moral consciousness, appears to be an internal dam holding back the expression of desires that tend toward acts considered morally unacceptable, and therefore generates a feeling of guilt associated with these same desires.

In describing the formation process of the super-ego which allows the child to enter into moral life, Freud is well aware of the risk involved: excess repression and therefore paralyzing guilt.

> To date, education has proposed as its task only the domination, or more accurately, repression of instincts: the result is by no means satisfactory. No one has taken the trouble to learn by what means and at what price in sacrifices this repression of bothersome instincts has been achieved. (1970)

The price may in fact be very high. An overly rigid super-ego, the result of a repressive education opposed to the expression of desires, may eventually anaesthetise these desires, which constitute the dynamic element in personality; excessive conformity to the imperatives of the super-ego may lead to the destruction of the internal spirit.

"Repression," Freud wrote, "leads to suppression, which leads to predisposition to later nervous ailments. Psychoanalysis on many occasions can observe the role played in the production of neuroses by a strict education... or the price paid in loss of activity or capacity for happiness to achieve the normality sought absolutely by the educator." (1973) To prevent such risks, Freud proposed a style of education that, while requiring behaviour conforming to cultural standards, leaves more room for voicing desires, "which makes the individual capable of culture and socially useful, yet demands of him the smallest possible sacrifice in personal activity". (1970) To accomplish this, he advocates the process of sublimation which, rather than brutally repressing desires, diverts their original objectives toward new objectives that conform to cultural demands. This process is still based on the same concept of an individual nature allergic to moral views but which can be made moral through a means other than constraint:

> Psychoanalysis can show what valuable contributions to character formation are provided by the child's asocial and perverse instincts if they are not subjected to suppression but instead are diverted from their original objectives to more valid objectives... Our greatest virtues developed as reactional formations and sublimations of our worst dispositions. Education should scrupulously refrain from burying these valuable sources of activity and limit itself to encouraging the processes that lead these forces into better channels. (Freud, 1973)

Although it concentrates on the period of early childhood and formation of the super-ego, the psychoanalytic theory makes a valuable contribution to a view of moral development by pointing out the overriding importance of first learning and the style of family education. While justifying the needs for cultural transmission based on a pessimistic view of individual nature, it exposes the risks inherent in this transmission that can have a major impact on later moral development, especially during adolescence. The rigidity of a super-ego that creates guilt may in fact explain the extreme difficulty some adolescents experience in the moral growth and search for identity. While it is true, as Erikson states, that the conflicts generated in early childhood by parental denials resurface during puberty and that renegotiation is necessary between desires previously repressed and a reality seen in a new light, the process described by Freud under the name "sublimation" shows one possible channel for this renegotiation.

3. The Child-Centred Model

This model, based on an optimistic view of individual nature, reverses the problematics of the earlier models. According to supporters of the child-centred approach, the child has an internal "potential nature" that is basically good. The human model therefore does not reside primarily in the culture; it does not have to be imposed on the child from outside, since it is already present within him. The resulting education "admits only educational goals already present in the child's nature, and rejects everything in social life that is complicated, artificial and, in his eyes, untruthful... This education does not refuse to aid the expansion of innate tendencies, but always respects their spontaneous orientation". (Hubert, 1952) The emphasis is placed on the ravages of cultural transmission: it prevents the child from developing his own model by enclosing his psyche in the straightjacket of the social model and creates in him an abusive duality by legitimizing the aspects of his personality deemed to conform to social norms and by repressing the others. Moral development will therefore occur under better conditions if the child is allowed to develop the potentialities inherent in his nature, at his own rate. This reflects the attitude of advocates of the child-centred school: Rousseau (1758), Pestalozzi (1882), Tolstoy (1903), Fichte (1908). Fichte phrased the question that lies at the bottom of this view of moral development: "How could education ever provide a child with morals, if these did not exist in him from the outset, prior to any education?"

More recently, Rogers has given a new form to this school and provided new justification by conducting a more thorough analysis of the risks of cultural transmission. He also started from the postulate a "human nature fundamentally deserving of trust":

> One of the most revolutionary concepts that emerged from our clinical research is the growing recognition that the centre, the deepest basis of human nature, the most internal layers of personality, the core of the human animal, is all naturally positive and fundamentally socialized. (1967)

He again repudiates Freud's view of a nature constituted of bad instincts allergic to social and moral life; he states that the basic need of the individual is to communicate with others and lead a social life. A child therefore does not have to be socialized by constraint; he does not attain altruism by the force of culture but by the development of profound natural tendencies.

> There is no need to ask ourselves who will socialize him, because one of his deepest needs is to associate and communicate with others... There is no need to ask ourselves who will control his aggressive instincts, because as he becomes more open to all of his instincts, his need to be liked by others and his tendency to give affection will be just as strong as the instincts that lead him to strike or grab. (1967)

In developing his theory, Rogers starts from the observation that an adult who suffers from alienation has trouble finding his true ego. (1969) He puts forth the hypothesis that this alienation comes from a split of the psyche into two parts. One, which conforms to social norms, develops in response to the demands of social adaptation: this is the self-image. While remaining open to consciousness, the other is subject to permanent filtering: it is admitted or rejected depending on whether it can integrate with the self-image. Rogers names it experience. He states that this division originates with moral education that burdens the child's development with "value conditions"; it subjects a person's experience to the "external evaluation criteria" of cultural standards and pays selective attention to the resources of the growing personality which instills in it a selective attitude toward itself. In this way, the gap widens between the image the person has of himself and the elements of his experience that cannot enter into it. Rogers bases his analysis on the concept of growth which, to explain the functioning of personality, postulates the existence of two coupled systems: an actualizing tendency that urges the individual to develop his full potential, and a system for evaluating experience that functions as a regulator of the first system by using it as a criterion. The organism instinctively senses what fits in with its actualization and positively evaluates an actualizing experience. The ravages of traditional moral education, Rogers claims, therefore arise from the tendency to replace this "internal evaluation system" with an "external evaluation system" since it subjects the child's experience to "value conditions" dictated by the cultural environment. (1973)

To remedy this abusive division of the psyche, the result of the transmission of cultural values, Rogers proposes a non-directive therapeutic approach to start a reverse process to that started by education. Therapeutic intervention attempts to dissolve "the value conditions to permit the construction of an ego congruent with experience" (1959) and to "suspend" the external evaluation system and reactivate the internal evaluation system. The individual thus regains confidence in his ability to evaluate his experience himself and question the values of his culture. Transposed to education, this non-directive approach, while not fundamentally questioning the need for transmission of values to the child, aims to prevent the risks inherent in this transmission. It places special emphasis on the fact that the educator, who must place limits on the child's desires, constantly tends to overstep his role; he brandishes the denials which create in the child a feeling of guilt about his desires. The child comes to view his desires as foreign entities that are not part of the self-image he must maintain to retain the affection and esteem of those around him. (1969) Rogers rejoins here Freud's observations on the ravages of repression; however, rather than seeking a remedy in sublimation based on a pessimistic view of instincts, he favours a moral education that safeguards the child's "experiential freedom" by allowing him to freely experience his desires and thereby helping him to free the positive tendencies in his nature. Finally, in his description of what he terms "a modern manner for determining values", Rogers make a significant contribution to a concept of adolescent moral development: he shows how the individual, by referring to his own experience and again turning to his internal evaluation system, can distance himself from the values transmitted to him and be able to reformulate them. (1973)

4. The Interactionist Model

The model just studied considers nature and culture as two distinct realities, initially existing independently of each other and later interacting. It works from the assumption that, at the start of psychic life there is a nature endowed with potential; culture then acts on this nature from outside either by stimulating it so it will actualize its potential, or by hindering its development through the imposition of behaviours demanded by social life. However, a study of child development shows this to be an error of viewpoint. This development can, in fact, be explained by first postulating a nature, which culture subsequently modifies. At any point during his growth, the individual is already the result of interaction with his environment; he is the result of social relationships that form an integral part of his personality and shape it. The human organism therefore cannot be viewed as a reservoir of potential that would actualize itself on its own if cultural obstacles were removed, as if culture were a poisoned gift. In fact, only through modes of expression provided by cultural models can personality take shape. The interactionist model states that the child can only attain moral life by receiving the values of his culture; moral education thus begins by the transmission of values. In a genetic perspective, this model argues that the individual, through development of his cognitive structure, acquires the ability to assume increasing independence from his environment and the culture that shaped it. Moral development, which occurs first by assimilation and internalization of cultural norms, evolves toward autonomy as manifest in a critical distancing from these norms.

In his study of moral judgement in children (1973), Piaget presents this development as a progressive passage from "heteronomous" to "autonomous" morality. Heteronomous morality is characterized by rules conceived as outside realities decreed by adults. Social norms, such as those based on respect for property, which prohibit theft, or those based on the smooth functioning of interpersonal relationships, which prohibit lying, are received by the child as orders he must not disobey. If he accepts them in this way, it is because of the great respect he feels for the person issuing them. These, then, are outside morals based on "unilateral respect" which the child feels for an adult whom he considers a demiurge with the power to rule on good and bad. This explains the mythical nature conferred on rules which ensures their immutability. The child submits to them without understanding why and measures his actions against the criteria of the penalties they carry. The morality of an act is therefore determined by its material consequences: anything that conforms to the rule and is not followed by punishment is good; anything that does not conform and is punished is bad. No consideration is given here to intent: this is what Piaget calls "moral realism". This dissymmetric relationship with the adult that characterizes heteronomous morality is complemented by the child's egocentrism "which in essence is a lack of differentiation between the ego and the social environment", a cognitive inability to take the views of others into account. Because of this cognitive inability, the child cannot achieve satisfactory negotiation between desires he cannot control and a reality he perceives through the prism of these same desires. He is therefore not able to develop acceptable compromises and needs rules imposed from outside to feel a sense of moral obligation. This moral realism is based on a conceptual realism that confuses the objective and subjective.

Through the growth of his cognitive structure and especially the appearance of operational thought, the child begins to evolve toward autonomous morality:

> The more the child grows, the less he is subject to the prestige of his elder and the more he discusses as an equal and the greater his opportunity to freely assert, beyond obedience, suggestion or negativism, his point of view over those of others: not only does he discover the boundary between himself and others, but he also learns to understand others and to make himself understood. Co-operation is therefore a factor of personality, if personality is understood to mean... the ego which, to gain respect, places itself within and submits to standards of reciprocity and objective discussion. (Piaget, 1973)

Operational thought is accompanied by a release from egocentrism, an initial access to objectivity and an ability to enter into another's point of view: this is how, at the age of seven or eight, the stage of "emerging co-operation" appears in peer groups where discussion takes on much more importance. The child begins to recognize the adult's imperfections; he escapes from the restricted circle of family and confronts rules different from those imposed on him unilaterally. Through this co-operation and the progress in operational thought that moves from the concrete to the formal level, he reaches the stage of codification of the rules he considers necessary for mutual agreement and as a means of ensuring the smooth operation of an activity. Lying, which was condemned as disobedience of a rule decreed by the adult, is now condemned because it breaks the confidence between peers. Unilateral respect thus gives way to mutual respect: respecting the rule is no longer a matter of obedience but rather of loyalty. The rule ceases to be external to the child and henceforth depends solely on mutual consent: it may be changed provided the decision is made by common agreement. The child becomes aware of the reason for rules and becomes a legislator. The morality of an act is no longer measured in terms of its material consequences but rather in terms of the intention it implies. Expiatory penalties, aimed at coercing the transgressor back into obedience, give way to penalties by reciprocity that arise from the need for co-operation. The internalization of rules, which is the result of the evolutionary process, provides access to autonomous morality.

Kohlberg (1958, 1976), whose theory falls into the same "cognitivist" perspective as Piaget's, completed the latter's research by identifying more, and more specific, stages of moral development. For more than 20 years, he conducted interviews of children, adolescents and adults. They were given a series of stories involving moral dilemmas in order to assess the level of moral judgment used in justifying their position on these dilemmas. The important aspect for both Kohlberg and Piaget was not to assess the subject himself on whether he conformed to an outside norm, but rather to evaluate the subject's underlying mental or oral process and thus the reasons for his decision. Observing only the external conduct would run the risk of learning nothing about the individual's moral process and being unable to measure his level of maturity. Kohlberg's procedure identifies six stages of moral development grouped into three levels of morality: preconventional, conventional and postconventional, which designate the three types of relationship the subject establishes with the moral rule presented to him.

At the first level, the child refers to the cultural rules that define what is good and what is bad and applies them in accordance with the physical and hedonistic consequences of the action taken. This is the heteronomous morality defined by Piaget. At this level, the first stage is that of "punishment or simple obedience". The physical consequences of the action determine whether it is good or bad. Avoidance of punishment and unconditional respect for authority are valued in their own right. This is the stage of blind obedience. The second stage, known as "utilitarian relativism", falls into an egocentric and individualist perspective and focuses on satisfaction of needs. The act is assessed in terms of its hedonistic consequences: what provides gratification is good, what leads to frustration is bad. Human relations are considered commercial relations and, if there is reciprocity, are characterized by egocentric pragmatism that excludes gratuitousness.

The second level assumes a release of the egocentricity from the previous level and the start of role taking that permits the individual to perceive the expectations of other members of society. Whether an act is good or bad is determined by these expectations. The distinction between good and bad therefore extends beyond simple obedience of a rule or authority: perceived expectations constitute a value regardless of the immediate or tangible consequences of the action. In the third stage, known as "good interpersonal concordance", the child has become sensitive to the emotions his behaviour causes in others and the reactions it elicits: a good action becomes one that others approve. This stage is characterized by strong conformity to social stereotypes. Moreover, the action is also frequently judged by the underlying intent. In the fourth, or "law and order", stage, the individual moves on to the idea of a social order that carries its own value, constitutes an end in itself, and takes precedence over individual rights. Respect for the rules that structure this order becomes the criterion for an action's morality. The action is good if it consists of doing one's duty, showing deference to authority and maintaining the established order.

At the crossover from the conventional to the postconventional level, Kohlberg identifies an intermediate stage, stage 4½, which he calls "ethical relativism". Due to the progress of his cognitive structure and sharper role taking, the individual starts to open his eyes to moral views different from his own and thus starts to review the cultural norms whose arbitrary nature he now recognizes. This allows him to move on to the postconventional level, which is characterized by the effort to define values independently of the authority of the people and groups who support them and of his involvement with those people or groups. The awakening to the conventional nature of cultural values is in keeping with a better understanding of the universality of moral principles.

In the fifth stage, known as "social contract", the respect of individual rights takes precedence over the concern for maintaining social order: moral rules appear to be the result of agreement between the members of society and emphasis is thus placed on procedures that promote consensus. Rules cease to be immutable and there is recognition of the need to change them when the common good requires. This common good, based on individual rights and negotiation between those rights, becomes the criterion of morality. This reflects the characteristics of Piaget's autonomous morality. Finally, the sixth stage, that of "ethical principles", defines good through a decision of individual conscience that applies ethical principles of justice, equality, reciprocity of rights and respect for the value of each individual to a concrete situation. Strictly speaking, these principles do not constitute moral rules but they do have a universal character. The morality of an action depends on whether the individual acted in accordance with the principles accepted by him as internal requirements. At this stage, it is no longer solely a mater of principles arising from a social consensus: the individual has become aware that there are values that transcend this contract.

The interactionist model just described thus attempts to move beyond the dual view of man, seen unilaterally as object by the cultural transmission model, or as subject by the child-centred model. In the first case, by perceiving man as an object to be instilled with culture, moral development is reduced to a progressive assimilation of cultural values and social education is equated with moral education. In the second case, overly unilateral emphasis is placed on the fact that cultural transmission creates alienation, and, by advocating an overly radical questioning of cultural values, it becomes very difficult to avoid moral relativism. By considering man as both object and subject, the interactionist model recognizes both the need for cultural transmission and the individual's power to question the forms his particular culture gives to universal values; he can rediscover these values and reformulate them. In the cognitivist perspective of this model, the development of cognitive structure, especially the appearance of formal thought, is expected to play a major role in this process of questioning and reformulation. Chapter 10 will examine this aspect.

CHAPTER 10 - CONDITIONS FOR MORAL DEVELOPMENT IN ADOLESCENCE

Research on moral development during adolescence seeks to determine the conditions required for this development to proceed. It shows in particular that observations do not always bear out the parallels between Piaget's stages of cognitive development and Kohlberg's stages of moral development. It would therefore appear necessary to break out of this exclusively cognitivist interpretation and refer as well to the social and affective components of personality. This chapter will study the roles of formal thought, role taking and affectivity in adolescent moral development.

1. Formal Thought and the Postconventional Stage

The view of progressive development toward autonomy inherent in Piaget's and Kohlberg's theories reveals close parallels between the respective stages of cognitive and moral development. Kohlberg (1971) in fact recognizes that his cognitivist hypothesis is based on the fact that moral judgment has a characteristic form at each stage; this form is parallel to that of intellectual judgement at the corresponding stage.

In the study of adolescent moral development, the first parallel that emerges is between access to formal thought and release from the conventional level of moral judgment. When Piaget refers to the capacity for formal operations which appears at the onset of puberty, he means that the adolescent can progressively carry out various mental operations without having to refer to concrete material. A major consequence of this new capacity is the ability to develop hypotheses: he can simultaneously imagine the various possible solutions to a given problem, take into account views that differ from his initial view and consider the implications. Thought becomes combinatory in that it can focus on all possibilities at once and select from them the one that seems to agree most with experience. Elkind (1970) feels it is this combinatory thought that allows the adolescent to consider new alternatives when confronted with a social problem.

> One consequence of the capacity for combinatorial logic is that, particularly in social situations, the adolescent now sees a host of alternatives and decision making becomes a problem. He now sees, to illustrate, many alternatives to parental directives and is loath to accept the parental alternatives without question.

It is within this same perspective that Kohlberg defines his stage 4½, the crossover stage between the conventional and postconventional levels; he calls this stage "ethical relativism" and places it in adolescence. This is more a release from the conventional level than actual advancement to the postconventional level. In making moral judgments, the adolescent can no longer refer to cultural norms as he begins to see their relativity, and thus makes increasing use of individual criteria.

> The adolescent crisis of relativism, stage 4½, can occur only because there is a dim apprehension of some more universal ethical standard in terms of which the cultural code is relative and arbitrary. (1973)

It is therefore not a rehashing of the components of the second stage during which the child measures the morality of an action solely in terms of whether it meets his needs. While the adolescent again refers to himself, it is because he has just realized that the cultural standards are not as absolute as he believed in the previous stage. He is therefore seeking new criteria for morality.

One should not jump to the conclusion that the stage of moral relativism alone characterizes adolescent moral development. There is, in fact, a considerable gap between the emergence of formal operations at the start of adolescence and the mastery of these same operations, which researchers claim occurs only between ages 16 and 18. The youngster of 11 or 12 who is entering adolescence has just satisfactorily mastered the concrete operations that release him from his previous egocentrism; he is moving into the third stage of moral development in which the morality of an action is measured in terms of the expectations of those around him. From this point, once he begins mental operations without referring to concrete material, he can advance to the idea of a social order and the rules that support it. He can then base his moral judgement on the maintenance of this order, which he considers more important than individual rights. Greater mastery of formal operations will be required before combinatory logic can be applied to morality and trigger the crisis of relativism just mentioned, which will again place priority on individual rights. We could therefore share Miller's (1978, pp. 262-263) conclusion that a youngster entering adolescence is at the second stage, will normally pass through the third stage between ages 12 and 18, and only after that will be able to advance through stage 4½. Matteson (1975) places the fifth stage at the very end of adolescence; he does not believe it possible to advance to the sixth stage before the thirties. Vandenplas-Holper (1979) also states "that a person just at the start of formal operations will not move beyond the third and fourth stages of conventional morality".

2. Formal Thought: A Necessary but Insufficient Condition

A general direction emerges from these considerations for the orientation of moral judgement during adolescence. Longitudinal studies of the change in adolescent values and attitudes shows that adolescents evolve from a fairly dogmatic attitude to a more liberal attitude toward society and a more tolerant attitude toward persons: young people are less ethnocentric at the end of college than at the start of high school. (Matteson, 1975). Research conducted on the campuses of Stanford and Berkeley on students starting courses in 1961 and continuing to the Bachelor's degree level found a fairly consistent model of evolution:

> The changes (in scores) all reflect a movement toward greater openmindedness and tolerance, a rejection of a restricted view of life... The complexity of the world is more and more recognized... The stereotyped view of right and wrong gives way to a broader acceptance of human diversity. (Korn, 1971)

These are clear indications of the presence of a stage of moral relativism in adolescent development; White found this in a 20-year longitudinal study of Harvard and Radcliffe students:

> The growth trend observed in the study of young adults is in a sense a continuation of Piaget's trend toward relativism. We prefer to call it a humanizing of values. (White, 1966)

In referring to Piaget's theory, Mitchell (1975) attributed this evolution to "passage from the concrete to the abstract". If moral judgement becomes more flexible, he claims it is because the adolescent is less riveted to the concrete experience of the moment, and is able to recognize that there are alternatives to his moral point of view and that others have the right to hold differing opinions. When he was a child, he considered any variance from the norm automatically bad. As an adolescent, he was less categorical: he could refuse certain conduct for himself yet tolerate it in peers. He then realized that the morality advocated in his family was only "one of many variations on the theme of morality"; he could no longer unconditionally accept his parents' point of view and began to screen the cultural values presented to him. Adults, formerly the guardians of good and bad, lost in prestige. It is what Matteson (1975) called "the fall of the gods". All of this research therefore confirms the hypothesis of a release from the conventional level during adolescence.

We cannot ignore the fact that other research appears at first glance to detract from this hypothesis. It reveals that a very large number of adolescents do not change significantly and do not become more liberal during their college years. Matteson (1975) himself admits that at the end of adolescence, a majority of young people remain blocked at the conventional level. Turiel's (1969) research indicates that most Americans function at the third stage of moral judgement; they always see moral value in terms of maintaining social order. In turn, Muuss (1975) cites research conducted with a group of 16-year-olds of whom 60 per cent had reached the formal stage; only 10 per cent of these had advanced to postconventional morality. These findings argue in favour of the theory of cultural continuity which is questioned by supporters of the "generation gap" and the existence of a "youth subculture". Friesen's (1972) work shows in fact that most indicators of the values of the students involved are directly linked to their ethno-cultural background. Thus, there is no "youth culture" distinct from the culture of parents and there are no major communication problems between generations. In the same vein, research by Gustafson (1972) involving about a thousand Scandinavian students reveals that most share the conventional values of their society. This led Coleman (1978) to question the theories that view adolescence as a time of "storm and stress". Based on a series of empirical studies, Coleman concluded that the emotional turbulence linked to the crisis of puberty has been overblown; the difficulty in the relationship between adolescents and their parents has been exaggerated; existing conflicts primarily involve minor matters (recreation, going out, schedules) rather than fundamental values. Thus, there is a continuity in values from parents to adolescents and the questioning of parental values by young people is simply a myth created and perpetuated by adults' fear of seeing their children grow distant from them. Faced with such discrepancies in empirical studies, we can conclude that moral development is not automatic; between the ideal growth curve plotted by the theories studied and real growth there is an unexplained gap.

Kohlberg notes that an individual may attain a given stage in cognitive development without necessarily attaining the parallel stage in moral development; stages of moral development thus cannot be considered the simple result of application of cognitive abilities to the moral sphere. He postulates the following hypothesis:

> The empirical relations found are that a given logical stage is a necessary but not sufficient condition for the parallel moral stage. (Kohlberg, 1977)

Thus, there is no automatic parallelism, "even though logical development must precede moral development, this does not mean that progress in logical thought leads ipso facto to progress in the development of moral judgement". (Samson, 1976) In a recent study, Rowe and Marcia (1980) restated Kohlberg's general hypothesis in an attempt to verify the existing link, first between formal thought and postconventional morality, and second between formal thought and completed identity. Their twin-faceted prediction that thought is a necessary but insufficient condition for postconventional moral judgement and completed identity seemed to be confirmed. While recognizing that the sample's limitations ruled out quick generalization, they concluded their study by stating that this was a plausible hypothesis that might very well be borne out by subsequent research. A question arises here, one that seems essential to the study of adolescent moral development: how is it that formal operations, which by nature should normally lead to a release from the conventional level, do produce the expected result? The answer to this question provides another essential dimension to moral development.

3. Role Taking and Moral Development

Rowe and Marcia analysed their results to explain that formal thought is not a sufficient condition for completed identity; they reach the conclusion that "something" must intervene to "trigger" cognitive development in the direction of psycho-social development. They find, in fact, that some subjects are not affected by events likely to upset the ego structure and precipitate an identity crisis; they hypothesize that this imperviousness in subjects to disturbing events is caused by an absence of social perspective or more accurately a failure to apply the logical-mathematical stage to the social sphere. Matteson (1975) proposed the same hypothesis on moral development:

> The social environment plays an important role in whether or not students mature in their moral perspective... Moral development is a product not only of cognitive learning but also of social learning.

The development of social perspective therefore intervenes between cognitive and moral development:

> We can speak of a horizontal sequence consisting of the following stages: first, confirmation at a certain stage of the development of logical thought; this allows attainment of a particular level of social perception; parallel development may then proceed in moral judgement. (Samson, 1976)

Cognitive development therefore cannot influence moral development without the factor of "role taking". This concept of role taking is given special attention by Flavell (1968), one of the Americans continuing Piaget's work. He claims that role taking refers back to knowledge related to the thoughts and behaviours of others. It consists of "temporarily adopting another's viewpoint to learn its purposes, motivations and behaviours, to see the ego and others through another's eyes and to learn that the other, in turn, may take the ego's perspective". (Keller, 1976) It provides an answer to the questions: "What does the other see? What does he feel? What does he think? What does he intend to do?. What is he like?" Moral development is made possible by role taking. It allows a person to learn to restructure his own moral scheme by incorporating those of others. (Kohlberg, 1969) Some research has confirmed this hypothesis: Keasey (1971) showed that the stage of moral development in early adolescence is positively linked to the fact that an individual is evaluated by himself, his peers and his teachers as having a high level of social participation and interaction in peer groups. Selman (1971) found that those who are socially involved and exposed to more opportunities for role taking advance faster than others through the stages of moral judgement. Costanzo (1973) also found that the ability for role taking is a precondition for progress in moral development. The ineffectiveness of formal thought in the moral sphere thus arises from the fact that the adolescent has not engaged in role taking which allows him to compare his own moral perspective to that of others, accept the latter and remodel his own accordingly. The crisis of moral relativism cannot be triggered and he remains anchored in an assimilating function that makes him interpret social reality through his own moral scheme. The many divergent opinions of those around him do not actually enter his field of vision, and he is therefore unable to "relativize" the moral perspective he has inherited from his education.

Hogan's (1973) model confirmed just this. It showed how moral development is based on the relationship between "socialization", which is the learning of values and behaviours favoured by the social environment, and empathy, the ability to understand another's point of view; it therefore stresses that moral learning is both assimilation of social norms and a certain distancing from these norms by exposure to the views of others. By analysing the various terms of this interaction, Hogan defines four levels of moral development: the level of "mature morality" characterized by a high level of socialization and empathy (Kohlberg's stage five and six); the level of "emancipation" characterized by a high level of empathy and a low level of socialization (which might correspond to stage 4½); the level of "rigid conformity" characterized by a low level of empathy and a high level of socialization (stages three and four); and finally the "delinquent" level characterized by deficiencies in both socialization and empathy (stages one and two). Empathy, without which the process of role taking cannot take place, thus appears to be a necessary condition for moral development. To advance to the "mature morality" level, the individual must be able to both lead a satisfying social life in accordance with the standards of his culture and constantly revise his own moral schemes by remaining open to those of others.

4. Affectivity and Moral Development

We would appear to have come right back to the same question: how is it that formal thought does not automatically trigger the process of role taking? What prevents its application to the social sphere? In particular, what prevents combinatory logic from operating and discovering the many solutions possible to a given social problem?

It is here that the cognitivist theories run into trouble, because they do not pay sufficient attention to the emotional aspect of moral development. Elizabeth Simpson (1974, 1976) tried to make up for this by advocating a holistic approach stressing the role of the affective dimension of the personality in moral development. She proposed a new explanation for this observed inability of formal thought to produce a role taking effect and trigger a release from the level of conventional morality. To show that Kohlberg had ignored the affective dimension of morality, she referred to the research in which he found that adolescents in rural villages or tribal communities generally did not reach the postconventional level of moral development; Kohlberg had explained this by the fact these cultures did not place importance on democracy. Simpson criticized this interpretation as too exclusively cognitivist, and suggested another: traditional and preindustrial societies do not use appropriate means to meet the basic needs of individuals, and the result is to restrict their motivation to achieve a higher level of moral development.

Breaking with the usual view which insists on drawing a parallel between Piaget's and Kohlberg's stages, she proposes a new parallel between Maslow's hierarchy of needs and Kohlberg's stages. The following table shows the link she establishes between Kohlberg's six stages and Maslow's six levels of need.

TABLE VI

PARALLELS BETWEEN MASLOW'S HIERARCHY OF NEEDS AND KOHLBERG'S STAGES

Kohlberg Motives of morality	Maslow Hierarchy of needs
1. Fear of punishment	1. Physiological needs
2. Egocentric pragmatism that excludes gratuitousness	2. Need for security
3. Good interpersonal concordance	3. Need to belong and be loved
4. Respect for law and order	4. Need for esteem
5. Respect for individual rights and the rights of society	5. Need for self-esteem based on a feeling of one's competence.
6. Awakening to values that transcend preceding motives	6. Need for self-actualization

Simpson does not consider this a simple parallel relationship, but argues that interaction occurs between the levels of needs and the stages of moral development. If adolescents have needs that are not being met, they cannot advance to a high level of moral development regardless of their cognitive level. If, for example, they cannot move beyond their needs for security, belonging or the esteem of others, they will find it quite difficult, if not impossible, to achieve a degree of role taking that allows them to advance to the postconventional level. Needs therefore represent a major force for holding back, stalling or activating moral development. In her attempt to verify this hypothesis herself with 50 high school students, Simpson found a correlation between the intensity of the need to belong and have the esteem of others, and a lower level of moral development. By contrast, a high level of self-esteem is positively linked to a higher level of moral development.

In turn, Hoffman's (1975) findings confirm Simpson's hypothesis in the area of altruism; he recognized the existence of a positive relationship between altruistic behaviour and emotional security. He concluded that individuals who are overly concerned with their own unfulfilled needs cannot be attentive to the needs of others. His theory of the development of altruism clearly shows the close link between the cognitive dimension and the affective dimension of personality: if an individual who has reached a level of cognitive development that should normally permit role taking remains insensitive to the views of others, it is because his unfulfilled needs pose an obstacle to application of his mental operations to the social sphere and thus retards his moral development. Selman's (1976) clinical research led him to conclude as well that a low level of self-esteem is both the cause and effect of a delay in moral growth. Finally, Bronfenbrenner (Garbarino and Bronfenbrenner, 1976) sought to determine the social stimulation required for an adolescent to be released from a conventional attitude and be able to develop his own system of values; he also refers to the idea of security. Without the social support provided by a feeling of security, the adolescent cannot tackle the divergent opinions generating tension and anxiety in him and he cannot apply his cognitive abilities to the moral field. This is what leads Bronfenbrenner to state that an "anomic" cultural environment cannot foster moral development. Basing their work on this need for security, Sutter and Luccioni (1968, pp. 11 and 12) suggest remedying the "lack of authority syndrome" during childhood so adolescent moral growth may proceed: "By ordering the child's life and filtering the demands and pressures of the environment, and checking the anarchy of his impulses, the educator creates an effect of support as well as an effect of guidance. Not only is the child protected from anguish and vertigo, but he is also placed in a world on his scale, while his emerging ego is given some consistency and a certain control, admittedly still external and impersonal, but also as necessary for edification of a true personality as scaffolding and framing is for construction of a house." Finally, any study of the influence of affectivity on moral development cannot ignore Gilligan's research (1976). It shows to what extent unconscious guilt linked to a rigid super-ego can weigh down adolescent moral development. This guilt acts as a powerful brake that can delay or stall access to postconventional morality: any questioning of established norms triggers a high level of anxiety that can only be lowered by intensifying the attitude of conformity.

We can conclude from this overall examination of the conditions of moral development that if there is a lack of parallels between an adolescent's cognitive and moral levels, it is because formal thought, which should normally provide access to the postconventional level, is not automatically applied to the moral sphere. A role taking effect must first be produced, triggering the crisis of moral relativism. But this role taking effect is not automatic either. It may be blocked by unfulfilled needs or a sense of guilt the prevents the individual from moving beyond his own view and interpretation of social reality to face those of others.

CHAPTER 11 - EDUCATIONAL IMPLICATIONS

This study of the conditions of adolescent moral development obviously leads to educational implications. Miller (1978) noted with good reason that it is too often assumed without sufficient verification that adolescents have reached the stages of formal thought and postconventional moral judgement. They are dealt with accordingly and given matter for thought that does not correspond to their real abilities and thus slows rather than stimulates their growth. We find, in fact, based on some statistics, that there is in most cases a gap between cognitive ability, which Piagetian theory states is advancing normally at this age, and the level of moral development actually reached. This finding underscores the urgency for moral education adapted to the period of adolescence.

The preceding analysis reveals, in fact, that education must make up for the observed problems in the area of role taking and unfulfilled needs, otherwise the adolescent, regardless of cognitive level, may very well remain stalled at the conventional stage, in an attitude of conformity to the values of his socio-cultural environment. He will then find it very difficult to meet the challenges of adult life in an increasingly pluralistic society. The crush of events will eventually force him into the crisis of moral growth which he avoided during adolescence. In light of research on adult life, this "mid-life crisis" would undoubtedly cause fewer conflicts if the distancing from cultural values had occurred at its normal time. Educators therefore have an important duty to help young people to penalize this moral growth that should characterize adolescence.

1. Three Models of Moral Education

In attempting to define the orientations of this moral education, Kohlberg (1972) identifies three main currents. The first is dominated by the concern for transmitting to young people the moral rules of society by teaching them these rules, encouraging imitation of the adult model, and making use of rewards and punishment. The second, called "romantic", is characterized by the concern for focusing on the child to develop his internal model by creating a permissive environment without conflict. The third, which he calls "development model", focuses on the various stages in moral growth and assigns educators the role of promoting advancement from one stage to the next. These three educational strategies are obviously based on the major theories of moral development discussed in Chapter 9. It is important to analyse here the consequences of each on adolescent moral development.

The first model of moral education is based, in traditional education, on instruction of morals reinforced with concrete examples that show how good behaviour is rewarded, and with the system of reward and punishment to obtain the desired behaviour. Recently, it has taken the form of "moral behaviourism" based on the principles of reinforcement and imitation. This model has the obvious advantage of promoting adaptation of the child to his social environment and presenting him with clearly defined values that help in structuring his personality. It emphasizes cultural conditioning which gives the child initial access to morality. But even though it promotes progressive advancement from external control to self-control through internalization of moral values, it does not lead adolescents to distance themselves from the values of their environment once their cognitive abilities make this possible. This creates a danger that the youth will remain indebted to the values of his culture, even if he has succeeded in making them his own. He has inherited a legacy without having had the opportunity to verify the worth of this legacy or, even more importantly, to rebuild it; by this very fact, he remains a slave of law and order, devoid of critical ability. The moral relativism stage, which is essential to postconventional morality, could not be crossed. This is undoubtedly why many adults never move beyond the final conventional stage, that of law and order.

The second model results in "negative education", which, in the extreme, considers culture a poisoned gift because it imprisons the child's psyche in the straightjacket of its standards. Adult intervention is seen as an obstacle to the child's spontaneous development. This reflects Rousseau's (1958) views which demand that we "not stand in nature's way" and state that "doing nothing is already a prodigious education". Montessori (1931) believed that the child's instructed personality, "that of forced adaptation", must give way to the spontaneous personality, which is clearly superior. The educator's role is to prevent outside factors from cramping the expression of this spontaneity. This model has recently emerged in the current of "non-directive" teaching devised by Rogers, which reinforces the child-centred approach and focuses on the risks inherent in the process of transmission of values. (Artaud, 1982)

Referring to these last models, educators have become increasingly hesitant over the values to be transmitted; to cite Toffler, they have "shirked" one of their essential tasks:

> While the shock waves of the industrial revolution tore down the old system of values, and new conditions required a new value structure, educators shirked. Reacting against clerical education, and teaching facts and letting students think what they may has become the epitome of progressive virtue. Cultural relativism and an appearance of scientific neutrality have replaced the emphasis on traditional values. Education has retained the concept of personality formation but educators have rejected the idea of instilling values on the excuse they are not qualified for this. (Toffler, 1971)

The harmful consequences of educators shirking their responsibility in this way were analysed in a document by Quebec's Ministère de l'Éducation (Naud and Morin, 1978) that shows how the preoccupation with furthering student freedom at any cost results paradoxically in an erosion of the very concept of freedom. Once the concept of freedom is emptied of any obligation and responsibility, the child is at the mercy of his uncontrolled impulses and the temptations of the environment. Unlike the preceding model, this model encourages moral relativism in the adolescent but does not give him the opportunity to move beyond it. This raises the risk that the youth will use his own desires as the only criterion for the morality of his actions. He regresses to the second stage of preconventional morality or, out of a need for security, stops at the law and order stage and is thus unable to advance to responsible moral life. Sutter and Luccioni's (1968) research on the "lack of authority syndrome in education" eloquently demonstrates just how real this danger is.

The third educational model, based on "interactionist" theories of moral development, is aimed at making up for the shortcomings of the two previous models. It assumes that a child grows by internalizing the culture and thus that transmission of values is indispensable for the structuring of his personality and forms an integral part of his education. The educator's prime task, therefore, is to transmit values to the child and lead him to adopt them as his own. This is what is implied in Piaget's heteronomous morality and in Kohlberg's preconventional and conventional levels of morality. This theory recognizes that a child gradually develops abilities that will allow him to move a critical distance away from the values transmitted, grasp their relativity and develop his own system of values. In this model, the stage of moral relativism is considered an essential phase in moral development, but one the adolescent must eventually leave behind. The postconventional level, made possible by formal thought and its effect of role taking, is characterized by access to stable and universal moral references from which the individual is able to reformulate the values of his culture. This opens the way for reformulation of these values and the moral autonomy Piaget considered the primary goal of education:

> The primary goal of education is to create individuals capable of doing new things and not just repeating what previous generations have done; individuals who create, invent, and discover. The second goal of education is to train critical minds that can verify and not simply accept as given what is presented to them. (quoted by Pulaski, 1971)

Working from this model, we will now determine the directions of moral education during adolescence.

2. Moral Education of Adolescents

The first thing that emerges is that adolescent moral growth depends closely on the way in which the previous stages of moral development have been handled. The stages of development must proceed in sequence: it is a constant of genetic psychology that no stage may be skipped and a stage poorly handled may affect all future development. For example, if the child, in the early stages of growth, is not able to refer to stable and defined values, he cannot give an initial form to his ego, carry out an initial ordering of his desires or adjust to reality. He is therefore in danger of remaining at the mercy of his impulses which rage out of control and whose revival poses an obstacle to his moral progress. If his needs for security, sense of belonging and social consideration are not adequately met, they will constitute regressive forces that hinder his progress toward autonomous morality. If excessive authoritarianism by his parents results in a rigid super-ego, which will be a lasting source of guilt and anxiety, he will find it very difficult to rid himself of a conventional attitude of dependence on the values of his environment; any questioning of his values will trigger a state of intolerable insecurity. These three examples show that deficient moral education that does not allow a child to progress through the stage corresponding to his level of development, may lead to a block at the previous stage of morality, regardless of the level of cognitive ability he attains.

This especially underscores the overwhelming influence of family atmosphere on child and adolescent moral development. According to Suppes (1971), there can be no moral learning when the child has no meaningful emotional relationship with an adult. Hoffman (1975) shows that the parents' role can be viewed from three different angles: they propose models to be imitated; they use certain educational techniques to encourage desirable behaviours; and they maintain gratifying affective relations with the child to provide him with adequate emotional security and make him more receptive. In a study of fifth- and seventh-grade middle-class children and their parents, he examined the hypothesis that difference in the children's moral orientation was due to a difference in the parents' affective and disciplinary models. In another study (1967), he showed that children attain a higher moral level in families where the parents encourage discussion of moral problems and require the child to use his cognitive abilities to understand a situation. This educational technique proves more effective than that based on assertion of power and withdrawal of affection. In an empirical study on the effects of the parent-child relationship on a child's moral development, Hower and Edwards (1976) showed that acceptance by parents is a prerequisite for for a child's acquisition of empathy. Parents who show a high degree of acceptance and a low level of control seem to be the best promoters of adolescent moral development.

The control needed to form a young child's moral character becomes harmful in adolescence if maintained at the same level. These conclusions were confirmed by research into the link between parental authoritarianism and low levels of adolescent autonomy. (Kandel and Lesser, 1969; Hill and Steinberg, 1976) Baumrind (1971) reached the same conclusion when she compared three styles of family education: the authoritarian style; the permissive style, and the style in which parents wish to promote independence while maintaining control. She found that the latter best developed the adolescent's social skills. All of this research revealed that the factors most favourable to development of role taking are: gratifying relations between adults and children; altruistic behaviour in adults; verbalization by adults of their own feelings and concerns about social problems; encouragement for children to imagine themselves in another's shoes; corrective feedback and reinforcement. Vandenplas-Holper (1979) concluded:

> The adult who promotes a child's moral development is affectionate, child-centred, but unlike misguided non-directive education, proposes moral rules and requirements that allow the child to progress toward independence.

Moving beyond the context of child-parent relations, some research has focused directly on Piaget's theory that progress is generated by conflict that creates disequilibrium in the cognitive structure; adaptation to this disequilibrium occurs through reorganization of the structure. If, for example, an adolescent is faced with a new experience that does not fit in with his conceptions at that time, he must resolve the conflict that has just arisen by developing a new structure that can incorporate the new experience. Applying this theory to moral development, Kohlberg states that progress, or passage from one stage to the next is linked to reorganization and restructuring of earlier modes of moral thought. This was also stated by Turiel (1973) when he proposed a model for transition from one stage to the next based on reformulation of the equilibration process: the subject perceives social reality through his structures, but since some elements force him to recognize these structures as inadequate, he constructs a new mode of apprehension that conflicts with the previous one; he then attempts to subordinate the previous mode to the new one, and succeeds after a period of transition.

To promote the adolescent's moral progress, it is therefore important to trigger a disequilibrium. For example, asking peer groups to make decisions in common causes conflicts linked to the divergent opinions and interests of those involved. If these divergences can be freely exposed, the adolescent discovers that his moral schemes are inadequate to resolve such conflicts; he must therefore restructure his schemes. This can occur within a single classroom when students are invited to make decisions on rules and discipline. In this same perspective, Kohlberg (1969) proposes his "moral dilemmas" method which is aimed at creating dissatisfaction in the adolescent with his concept of good and bad by exposing him to situations that present moral conflicts but not presenting him with a defined solution. Turiel (1966) verified the hypothesis that confrontation with opposing arguments generates a cognitive conflict that causes disequilibrium in the existing moral structure. He found that 50 per cent of the subjects in his experimental group passed through a stage of moral development and that 10 per cent passed through two. During the same period, only 10 per cent of subjects in the control group passed through a single stage. The subsequent verification revealed that this was not a passing change but a permanent structure.

These findings illustrate the overriding influence of the adolescent's environment on his moral development. It can be stated that if young people's moral development proceeds at different rates, this may be due in part to the fact that the environment provides varying numbers of opportunities for conflict and role taking. Bronfenbrenner's theory of "cultural relativity" shows how an adolescent's moral development is the result of interaction between his abilities and motivations, and the specific characteristics of this culture, which underscores the crucial importance of the socio-cultural and socio-political framework. Bronfenbrenner (Bronfenbrenner and Garbarino, 1976) names three distinct levels of moral development that are identical in all youth and all cultures: "hedonistic" morality, based on the pursuit of pleasure -- if it extends into adolescence, this hedonism creates a pathological situation; a "system of social agents" in which social agents constitute the reference for assessing the morality of actions; and finally, "values and ideas", where morality is governed by values and principles. To attain this third level, young people require the influence of social agents who, by providing them with different and divergent views, create conflicts that generate moral progress. Bronfenbrenner names three distinct social contexts that each exert a different influence on adolescent moral development: the "monolithic" context, in which social institutions and agents are organized around a single set of goals and principles -- this reflects the components of Riesman's (1964) society based on "traditional determination"; the "anomic" context in which social agents propose divergent ideologies without the existence of any normative and institutional coherence; and finally, the "pluralistic" context in which social agents and institutions represent different expectations that create inter-group conflicts which are, however, subject to a common commitment to a specific social order. The monolithic context, because of its absence of conflict, does not promote passage to the second and third levels of morality. The anomical context, through its lack of social regulation, intensifies moral relativism and threatens to create the pathological situation of arrestation at the first level. It is the pluralistic context that best promotes access to the third level of morality. Rowe and Marcia (1980) reached the same conclusion at the end of their study on the link between formal thought and completed identity: they found that a culture that does not provoke conflicts keeps the adolescent in a state of forclusion and does not allow him to enter the moratorium phase that is necessary for building his own identity.

Moral education therefore cannot be reduced to a simple transmission of cultural values as is the case in a monolithic social context and authoritarian family environment, or to maintenance of the adolescent at the stage of moral relativism without helping him to rediscover stable and universal values as is the case in an anomic context and a permissive family environment. To quote Ardoino, this education is both "a search for social integration and acquisition of the power to contest... difficult and constantly renewed mediation between the determinism of cultural history and the invention of a personal project". (Acts of the Fourth Congress, 1976)

Finally, it is the three basic needs of the adolescent as they appear in the development of moral judgement that must guide adult behaviour. Let us first accept that the adolescent needs outside reference points that represent for him the values of his culture, so he may experiment in his search for identity with adequate security at a time when his self-image is too inconsistent to provide an internal reference point. Even if these outside reference points will eventually become targets for him, they do provide a context that allows him to accept the risks of his growth; he views them as a haven he may retreat to after experiences that might prove destructive. The educator must therefore firmly maintain certain requirements based on his own values if he wishes to promote the adolescent's moral growth. But if he limits himself to this, there is a risk he may consciously or unconsciously wish to mould the adolescent in his own image; he may become inflexible when conflict arises, casting guilt on an internal movement that expresses an essential need for growth, or transforming it into sterile rebellion.

At the same time, the educator must allow the adolescent to determine for himself whether the proposed rule for living has any real meaning for him. What meaning could a value based solely on adult authority have for a youth, when it had no roots in his own experience? Of what worth are pat solutions that he has not rediscovered as satisfactory for reconciling his new needs with a reality he is beginning to see in a new light? But if the adult limits himself to this, and leaves the adolescent only enough freedom to verify the values transmitted, he runs the risk of falling into another trap that is no longer that of authoritarianism but of manipulation: he invites the young person to reflect on his own experience in the secret hope that at the end of the road the adolescent will rediscover the adult's system of values in a form the young person believes to be complete and immutable.

This is why the third need, which leads the youth to revive and reformulate the values of his culture, must be met. Just as access to concrete operational thought triggers in the child a need for verification, access to formal thought triggers in the adolescent a need to reformulate his values. Childhood identifications no longer meet the new, emerging aspirations, and the adolescent looks for other models that will allow him to reshape the values transmitted to him and which he has internalized. He feels too confined in his self-image that was defined under the values of his parents and environment. These values, which helped him to grow and whose wisdom he has been able to verify, appear too rigid for his own comfort. The proposed solutions do not leave enough room for expression of his own needs and all the potential he feels within himself. He is tempted to transgress the boundaries which he sees as arbitrary constraints, to jump the fence and try new experiences that will reveal new aspects of himself. He can do it, because he is no longer locked into the context of concrete experience of the moment, as in the previous stage; he has now acquired the ability to detach himself and develop hypotheses that allow him to explore other possible solutions and try other modes of existence.

To be able to meet this need for reformulating values, the adult must agree to change his attitude toward his own values. In the monolithic social context where he considers himself the standard and the model to which the young person must conform, this need cannot be met because it is considered a dangerous challenge to social order. But as society becomes more pluralistic and traditional values are not as stable, the adult who has established his self-image by reference to these values finds himself confronted with his own growth crisis. He will take a much different attitude to the adolescent's moral development depending on whether he accepts that this crisis must result in a questioning of his own values. (Artaud, 1982) He may in fact adopt one of three attitudes that create the three types of educational climate described by Baumrind. (1971) If, out of fear of the questioning he feels rising in himself, he hardens his system of values, he will attempt to impose it on the child by authoritarian means, "thus reinforcing in himself the old prohibitions". (Mendel, 1971, p. 192) If, as often occurs today, he opts for permissiveness akin to laissez-faire, it is because he has become unsure of the values transmitted to him and because he lacks the courage to redefine them in terms of his own experience. This abdication of educational responsibility is simply a reflection of abdication from the task of redefining oneself. Only if he agrees to accept the consequences of his growth crisis will he be able to guide the adolescent's moral development without imposing on the adolescent the straightjacket of his own model. In fact, he can only truly respect the adolescent's need to question his values from the moment he himself agrees to reformulate his own. Unless he has taken that step, he will have great difficulty in allowing the adolescent to do so.

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